

C
ut 18
1915-16

The Biennial Report

OF THE

Board of Trustees

OF THE

Agricultural College
of Utah

For the Years 1915-1916

ACCOMPANIED BY

The Report of the President and the
Secretary's Report of the Receipts
and Disbursements

THE BIENNIAL REPORT
OF THE
BOARD OF TRUSTEES
OF THE
Agricultural College of Utah
For the Years 1915-1916

Accompanied by
The Report of the President and the Secretary's
Report of the Receipts and
Disbursements

PRINTED BY
THE ARROW PRESS
TRIBUNE-REPORTER PRINTING CO.
SALT LAKE CITY
1917

CONTENTS.

	PAGE
1. Report of Board of Trustees.....	1
2. Report of the President.....	4
3. Reports of Directors of Schools and Divisions:	
School of Agriculture.....	19
School of Agri. Engineering and Mechanic Arts....	22
School of Commerce.....	23
School of General Science.....	24
School of Home Economics.....	25
The Summer School.....	26
The Experiment Station.....	28
The Extension Division.....	39
County Agent Work.....	41
Irrigation and Drainage.....	46
Dairying	52
Dry-Farming	54
Home Demonstrations	59
Junior Vocational	63
Community Service Bureau.....	67
Farm Management Work.....	68
Farmers' Institutes and Schools.....	73
Trains, Fairs and Exhibits.....	76
Publications	78
Recommendations	81
Branch of the Agricultural College.....	82
4. Reports of the Departments of Instruction:	
Accounting and Business Practice.....	90
Agronomy	91
Animal Husbandry and Poultry.....	94
Art:	
Fine Art Section.....	97
Applied Art Section.....	100
Bacteriology and Physiological Chemistry.....	104
Botany	106
Chemistry	108
Correspondence Study	110
Domestic Art	113
Economics, Sociology and Political Science.....	115
English	116

Elocution and Public Speaking.....	119
Farm Mechanics	120
Finance and Banking.....	122
Foods and Dietetics.....	123
Geology and Roads.....	124
History	126
Home Construction and Sanitation.....	127
Horticulture	128
Irrigation and Drainage.....	129
Mathematics	135
Mechanic Arts:	
Forging	135
Machine Work	137
Woodwork	141
Military Science and Tactics.....	143
Modern Languages	144
Music	145
Physical Education for Men.....	147
Physical Education for Women.....	148
Physics	149
Physiology and Medical Supervision.....	151
Publications	153
Rural Architecture and Surveying.....	154
Veterinary Science	156
Zoology and Entomology.....	158
5. Report of the Librarian.....	160
6. Report of the Registrar.....	162
7. Report of the State Power Plant.....	165
8. Report of the Superintendent of Water, Heat, Light and Sewerage	167
9. Report of the Superintendent of Buildings.....	169
10. Report of the Superintendent of Grounds.....	172
11. Report of the Secretary.....	174

THE BIENNIAL REPORT OF THE
BOARD OF TRUSTEES
OF THE
AGRICULTURAL COLLEGE OF UTAH,
FOR THE YEARS 1915 AND 1916

*To the Governor and Legislative Assembly of the State of
Utah:*

Ladies and Gentlemen: I have the honor to submit, herewith, the Biennial Report of the Board of Trustees of the Agricultural College of Utah for the years 1915 and 1916.

In submitting this report it is my pleasure to record the unusual degree of success which has attended the work of the College during the past biennium, the present excellent condition of the plant, and the hearty spirit of loyalty and devotion to education and love of the State, which permeates the faculty, the student body, and all the officers of the institution. Never before in the history of the College has a more wholesome spirit and a greater unity of purpose prevailed. The support of the public has been one of the striking manifestations of recent years. This support today is stronger than ever because of the substantial accomplishments of the College in the interests of popular education in Utah.

The College is expanding in its usefulness. The interior instruction is now on even standing with any similar work done in America or the world; the experimentation continues to record new achievements in the world of science and in the interest of the farmers of the State; the extension work has taken on new phases which make the College a most potent factor in the life of the people. The Agricultural College is proud to be the farmer's College. It proposes to magnify that calling

until it has achieved the very utmost in the development of our rural civilization.

The present year witnesses a substantial growth in practically all departments. The needs of the institution are clearly set forth in the report of the President of the College. The Board of Trustees, heartily approving every item listed, strongly recommends them to the favorable consideration of the Governor and the Legislature.

The needs of the College are summarized as follows :

1. Dairy, and Live-Stock Building.....	\$ 55,000.00
2. Increased appropriation for Experiment Station (\$2,500.00 in 1917; \$5,000.00 in 1918)	7,500.00
3. Home Economics Practice House—(Lab. and Equipment)	10,000.00
4. Horse Barn	8,000.00
5. Lavatories, Mechanic Arts Building.....	2,000.00
6. Granary	2,000.00
7. Live-stock	3,000.00
8. Pasture	3,000.00
9. Remodeling Dairy Barn, Milk House and Cattle Sheds	2,000.00
10. Irrigation and Farm Machinery Building....	40,000.00
11. Extension of Heating System (tunnels and piping)	600.00
12. Water Connections at Barn.....	500.00
13. Repair Shop for Superintendent of Buildings,	1,500.00
14. Plant Breeding, Plant Disease and Insect Control House	6,000.00
15. New Power and Light Lines and Iron Posts..	2,500.00
16. Completion of Heating Plant.....	18,000.00
Total.....	<u>\$161,600.00</u>

In addition to the above, 20,277.00 will be needed for maintenance of the State Power Plant, as per subjoined report.

The Branch of the Agricultural College is doing well the work entrusted to it by the people. Its influence in the development of southern Utah is marked in the direction of better farms, better homes, and a more enlightened citizenship. The

following appropriations are needed at the Branch of the Agricultural College during the coming biennium:

1. Repair and Improvement of old buildings.....	\$ 7,825.00
2. New Buildings	4,900.00
3. Campus Improvements	5,825.00
4. Furniture and Equipment.....	21,295.00
<hr/>	
Total	\$ 39,845.00
Special Additional Maintenance.....	20,000.00
Deficit (approximately)	13,000.00
<hr/>	
Total	72,845.00

We ask respectfully that the appropriations listed above be granted. The cordial support of the officials of the State has been a characteristic feature of the development of the College. With such strong support the College has grown to be perhaps the strongest educational force in the State. We desire to express our appreciation of this generous understanding of the function and usefulness of the institution.

Respectfully submitted,
 LORENZO N. STOHL,
 President, Board of Trustees,
 Agricultural College of Utah.

Biennial Report of the President.

1915, 1916

To the Board of Trustees of the Agricultural College:

The President of the College has the honor to submit to the Board of Trustees the following report covering the work of the last two years and including a statement of the needs of the College during the coming biennium. For a more detailed statement of the condition of the College, your attention is respectfully invited to the appended reports which are submitted as a part of this report. The appendices include:

1. Reports of the Directors of Schools.
2. Report of the Director of the Experiment Station.
3. Report of the Director of the Extension Division.
4. Report of the Principal of Branch Agricultural College.
5. Reports of Departments of Instruction.
6. Report of the Librarian.
7. Report of the Registrar.
8. Report of the State Power Plant.
9. Report of the Superintendent of Heat, Light, Power, and Sewerage.
10. Report of the Superintendent of Buildings.
11. Report of the Superintendent of Grounds.
12. Report of the Secretary.

To develop Utah is the main function of the Utah Agricultural College. This development must take into account four chief divisions of the State's life and activity:

Function of the College (1) its agriculture, (2) its homes, (3) its business or commercial activity, and (4) its mechanical industries. To husband these fundamental activities, by securing their rapid and safe development to a high plane of efficiency, requires an extensive machinery of education. We must deal with

the physical resource itself and with the man or woman whose activity is joined with the resource in the economy of the State and, very emphatically, with the young man and woman who must be trained for leadership in the development of our industry and our civilization.

The Agricultural College interprets itself, therefore, to be an instrument for a special purpose. And as an instrument it labors to adjust itself to the needs of the day. We want no Greater Agricultural College except as a greater Agricultural College is needed to build a Greater

Utah. The desire for a Greater Utah is first.

A Servant of the People With this in mind every expression of achievement or report of our wants is based upon the adaptability of each to the business and enterprise of Utah. Every request is made with the idea of rigid economy in mind. Nothing is asked for which cannot be used to build the State. Nothing is asked for which is not productive in nature; that is, which is not designed to add to the State's income and thereby return the money which may be expended in developing the principles underlying the industries of the State, and training the workman and leaders to carry these industries forward.

The Federal Morrill Act of 1862, which made possible the creation of the Agricultural College, stipulated that the College should deal primarily with the great divisions of education mentioned earlier in this report. It is in perfect

A National-State College harmony, therefore, with this act and supplementary acts thereto that the College is developing. Those prominent in the founding of the College, among whom may be mentioned the Honorable Anthon H. Lund and the Honorable Brigham H. Roberts, wisely laid the foundation of the institution, in harmony with Federal enactment, broadly and deeply in the industrial life of the State so that development has been in large measure but an unfolding of the original plans of the founders.

The Agricultural College occupies a distinctive place in the education of the State and need not interfere with the activity of any other institution. The law clearly defines what the University of Utah may teach and what the Utah Agricultural College may teach. The fields are quite

The Relation of the College and the University

different and distinct. The University devotes itself to Liberal Arts, Medicine, Law, Engineering (other than Agricultural Engineering) and Normal School work. The College devotes itself to Agriculture, Home Economics, Agricultural Engineering, Mechanic Arts and Commerce. In their activities the institutions may cordially co-operate in their closely related fields; may indeed, and should, definitely co-ordinate their activities looking toward economy of effort. In the orderly development of the State's education each will best serve the State by developing its particular and characteristic activities. Unnecessary duplication is very easy of avoidance under such conditions. The present happy spirit of generous acknowledgment of the functions of each other should be a source of satisfaction to all those interested in the development of the State.

The Enlarging Field of the Agricultural College

There is an ever widening field of activity confronting the College in its distinctive courses of study. The past years have witnessed phenomenal development in agriculture and its related industries. The College has kept pace with this development in a fashion to command the admiration of all. It now confronts new and interesting developments which call for equal spirit and energy in meeting the conditions arising.

Practical Courses

The College has established itself as an institution of higher learning, ranking evenly with the best institutions of America of its kind. If it would maintain this fine station of rank among its fellows, and with this fundamental basis in the sciences and arts of man, it must now arrange its courses more nearly to meet the needs of the working men and women of the State. It has done all that was needed in the past and indeed has served the workers of the State in a spirit unexcelled. The State's vigorous industrial development, the recent opening up of new agricultural and commercial opportunities, the extension of our mechanical arts and the discovery and recognition of our own great resources of land, water and metal, the discovery of new truth, the development of transportation facilities, the unusual prosperity of our farms, calling for more careful

husbanding of our lands and stock—all these things and others make now especially urgent the call for more adequate training of our citizens in their vocations in a direct, immediately practical way. Facility should be provided for the practical training of our agriculturists to an extent that has not been possible before because of lack of room and equipment. The State now needs, in numbers, creamery men, cheese makers, range masters, men trained in the sorting and grading of wool and the management of sheep, men trained in the scientific fattening and conditioning of stock, orchardists, canal managers, gardeners, and poultrymen, to mention only the more striking of our immediate needs. Likewise in the mechanical arts there is need of builders, blacksmiths, contractors and other mechanics. The practical housewife needs to know more of nursing and care of the sick in general, more of foods, more of millinery and clothing, more of home decoration and home sanitation and family management. In commerce likewise, the vocational field is broad for the training of practical workers for greater proficiency in their calling. The time will come when there will be annually thousands, instead of hundreds as now, of the State's working men and women who will spend six weeks to three months at the College. The growth in these courses this year is such as to make additional room imperative. The next few years will see tremendous development of our Practical Courses which require no previous high school training and which occur from the middle of November to the middle of March, during the dead season of the year for the majority of our citizens.

The Agricultural College has a special appeal to the parents of the State. More and more from year to year, the mature men and women have found interest and intellectual profit in attending the various courses of the institution. With the development of our practical winter courses this interest will increase. Next winter, beginning near the middle of November and extending until March, I recommend that the College be authorized to organize a Parents' Course, open only to the mature men and women of the State. In this course, which will be conducted by the best teachers in the College, the most

A Parents' Course

choice and fundamental things in modern science and art will be taught, and demonstrations conducted to reveal the most interesting and important facts and principles of our modern civilization. Thousands of parents, especially farmers and their wives, have been deprived of the blessings of education. This course will enable them under the most favorable circumstances to carry on studies during the season of the year when their home work can well be left for a time. Obviously no examinations or prerequisites will be necessary in this work. The work will cover the fundamental scientific facts in our agriculture and home life, the essentials of political economy, good English and how to speak it and write it; modern social organizations, and social science in general, the principles of science upon which our modern industry is built, a scientific analysis of modern manufacturing, how to live in conformity to modern facts of sanitation, personal hygiene, a resume of the world's most recent thought on religion, peace and war. In brief the panorama of the world's development will be presented to the students.

The course cannot fail to be one of the features of Utah education.

Training for motherhood—this is the most sacred obligation laid upon the College. Beginning in September, 1916, definite courses were arranged in Mothercraft. The Utah Agricultural College is the first institution of higher learning in America to begin such work. Comments and inquiries from many parts of the country indicate the immediate popularity and necessity of the work. These courses in Mothercraft, which are made a definite part of the work in Home Economics, are designed to train the girls, by actual practice, in the care and rearing of children. Students are sent into the homes in charge of the

Mothercraft College physician, and, with the mother of course always responsible, are given the custody of babies and small children as regards their feeding, clothing, nursing in case of minor ailments, education, play, and recreation. Children, and babies with their mothers, will be brought to the school and the students given charge of them in all their activities under expert supervision. In such manner, only, effectively can we

inculcate the cardinal doctrines of wise motherhood. In such manner, only, effectively can we combat the greatest wastage in society—the fearful mortality of babies, especially under two years of age. This course, which is now being watched by many educators and others in the country, is destined to bring great credit to our College and to our State.

The Utah Agricultural College was the first institution of higher learning in the Western States to give a degree in Commerce. Since its first establishment the School of Commerce has served the business interests of the State through its numerous graduates and by consultation; and, in some cases, special supervision of the business interests of the State. The faculty, from year to year, has been strengthened until today the College undoubtedly possesses as strong a body of teachers in commercial branches of learning as can be found in Western America. Such a condition is fortunate because the State, and especially the rural population, is now entering upon what may be called the second phase of agricultural development. We have conquered the rudiments, at least, of crop and stock raising, having mastered many of the intricate problems that concern agriculture and irrigation and dry-farm conditions. Relatively complete mastery of stock and crop raising will come only with continuous effort, experimentation, and education. But we have mastered in part the first problems of actual production. We now approach the second phase, that involving marketing, business management, rural organization, rural credit, co-operation, and related departments of the New Agriculture. We must bring expert business attention to the farm if we are to succeed fully under our conditions. The School of Commerce, therefore, has a most useful campaign of activity ahead of it, and the men are equal to the task. While the School will serve the farmer in larger measure in the future, it will likewise give that complete fundamental training in business methods adaptable to all phases of commerce which it has given in the past.

The School of Agricultural Engineering at the College is now five years old, being established by the Board, upon President Widtsoe's recommendation, in 1911. It has

demonstrated its great ability to serve the State by devoting its energies to such fundamental considerations as irrigation, drainage, road building, rural sanitation, farm machinery, power on the farm, and agricultural manufacturing. The School has grown to large proportions, and is now better organized than ever before for effective work. Under the Federal law creating the College, such work in agricultural engineering and mechanical arts is basic in the institution. This school reaches and serves those engaged in the mechanical industries as the School of Agriculture reaches and serves the farmers.

I especially call your attention to the subjoined report of the Principal of the Branch of the Agricultural College. This thriving institution is continuing to receive the unlimited support of the people of Southern Utah, and is continuing to serve the State. It is, without doubt, one of the best investments the State has. I trust that its legitimate needs, as pointed out by the Principal, may receive the earnest consideration of the Legislature. Doing pioneer work of a character which already is producing marked changes in the agriculture and the education and the citizenship of Southern Utah, it merits hearty recognition.

By recent enactment of Congress, and special order of the War Department, the Utah Agricultural College has been designated for the establishment of one or more units of the Reserve Officers' Training Corps. Under the provisions of this Act, the College will receive additional aid from the Federal Government in the carrying out of its work in military science and tactics. This additional aid will take the form of free uniforms for all the cadets engaging in military drill, and, in addition, commutation of rations to the extent of \$9.00 per month to those who continue the military work during their junior and senior years, signing a contract with the Government; which contract will include, among other things, the statement that the men will accept temporary appointment as Second Lieutenants in the army following graduation, for six months on regular pay; will attend certain military en-

campments on regular Government pay; and will hold themselves ready to enlist as officers in the army in case of necessity. Under the provisions of this Act the College will be able, in a very admirable way, to serve the Government, and will be enabled also to help many needy students in their work at College. It is for these reasons that the application has been highly recommended by the President of the College.

I call your attention to the report of the Director of the Experiment Station hereto included, which clearly sets forth the great problems affecting Utah agriculture which are now absorbing the attention of specialists in the Station. Undoubtedly, the relatively small sums of money spent in the State on experimental work have been very productive expenditures. The Station occupies an enviable position among similar institutions in America and the world, and every effort is being made to bring the work of the station to even higher standards of scientific achievement and of service to the people.

The report of the Extension Division, herewith included, is a striking example of the tremendous strides made by the Agricultural College during recent years. Extension work is now a co-operative enterprise under Federal law, and as such, a great part of the salaries and many other expenses connected with the work are paid directly from Federal funds. The co-operative feature of the work has been especially pleasant and effective in Utah; the Federal officials evidencing every disposition to make the work thoroughly agreeable and efficient. The growth of extension work in agriculture and home economics is the most remarkable educational manifestation in the United States, today, and the achievements in extension work are a herald of the time rapidly approaching when the blessings of education will be laid at the door of every man and woman who desires them. All the ideals of American democracy are very closely interwoven in the fabric of education at the Agricultural College of Utah, especially as regards its work on the farms and in the homes of the people.

You will find very interesting and stimulating reading

in the reports of the various Schools of the College hereto appended. The School of Agriculture, the Various School basic division of the education of the College, Divisions is thriving under its new director, Dr. George R. Hill, Jr. It may now be safely said that the training in the science of agriculture given at this College is the equivalent of the work given anywhere in America. A standard has been reached which insures the best possible results.

The School of Home Economics is experiencing by far its most successful year. The enrollment has rapidly increased, and there is a wider spread sentiment in favor of education for women along practical home lines than has ever prevailed before. There Home Economics is urgent need of additional equipment and practice house space, in order that the School of Home Economics may go forward in its work as it should. Quite effective co-operation has been established during the present year between the different scientific and other departments and the School of Home Economics, by means of which some of the instruction in Home Economics is being given by other departments.

You will note from the reports of the Schools of Agricultural Engineering and Mechanic Arts, that there is a thriving interest and increased registration in this work. Undoubtedly additional attention Agricultural Engineering and Mechanic Arts will, of necessity, be paid by the College to its work in Mechanical Arts and Agricultural Engineering in the immediate future. The State is rapidly assuming its proper place in industries related to these departments, and the College can be of great service in helping the industries forward.

The College is maintaining an established reputation in its general scientific departments. These have been developed very consistently since the founding of the institution. Graduates of the College General Science have found employment in many of the most advanced institutions of learning and of science in the United States. The record of the graduates of the institution is a record of unusually brilliant achievement.

It is my pleasure to record here, officially, an acknowl-

edgment of the debt of gratitude which the institution and the State owe to former President John A. Widtsoe of this College, now President of the University of Utah. President Widtsoe's resignation, effective September 1, 1916, closed a record of marked achievement at the Agricultural College. During his term of office of nine years as President, the institution has assumed its present magnificent organization, and its present high standing in the confidence of the people and of sister institutions throughout the world.

In addition to the resignation of President Widtsoe, other changes of note have taken place which require brief mention. Dr. E. D. Ball, after nine years as Director of the Experiment Station, resigned and was succeeded by Dr. Frank S. Harris. Dr. Ball's work, during his long period of service to the State, has been notable in the field of entomology. His contributions to the development of the horticultural and sugar-beet industry have been of very high order. Coming to the State at a time when the horticultural industry was in a quite disorganized condition, his researches and extension work have very materially aided in the development to the present high standard in fruit production in Utah. Professor John T. Caine III, formerly Assistant Director of the Extension Division, succeeded as Director of the Extension Division at the time of my election to the Presidency of the Institution by the Board of Trustees. Dr. George R. Hill, Jr., was appointed, at the beginning of the year 1916-17, as Director of the School of Agriculture; and Professor R. B. West as Director of the School of Agricultural Engineering and Mechanic Arts, succeeding Dr. Frank S. Harris.

The present year, 1916-17, witnesses a substantial increase in College enrollment as recorded in the report of the Registrar. This increase is especially encouraging in view of the fact that several Junior Colleges began their work last September. Such increase speaks well for the general condition of prosperity of the farmers of the State and the continued interest of the State in higher education. The Utah Agricultural College has more students now registered in agriculture and related branches of study, in pro-

Growth of College portion to population, than any other Agricultural College in America. Our opportunity is clearly and well defined: to build in this State a rural civilization which shall be the model for all the world. Such is not an idle dream. Such an ideal is within our reach. Our agriculture is demonstrated to be sound economically inasmuch as our best farmers are earning as much as the best farmers in any other section of the country, excluding only a few specially favored areas near to large markets. We have a people already trained in the spirit of co-operation, for the lack of which agriculture in America now pauses in its forward march. Utah is the birthplace of rural co-operation on this continent. We have a people with the highest educational ideals, a people devoted to education in a way unsurpassed. Upon these factors we can build a civilization which may surpass anything which the world has yet known.

Furthermore, our agriculture, because of distance from markets, climate, cultivated forage, feed and range opportunities, must be centered around the live-stock and dairy industries. This insures a higher type of agriculture than is possible under different agricultural conditions. The most encouraging agricultural development of the past year is the enlargement of our facilities within the State for the handling of our live-stock through the excellent yards and packing plant at Ogden and the Cudahy Plant and Union Yards in Salt Lake. Our farming is diversified, which is the most stable and prosperous type of farming, because of the demands which it makes upon the intelligence and ability of the operator, the restoration, which it makes possible, of fertility to the land—thus avoiding that soil impoverishment which is the most serious problem of the more exclusively cropped areas of the world. Diversified farming, which includes live-stock farming, is the most sound, economic type of agriculture on a pure business basis.

Besides being adapted to the raising of cereals, garden truck, and fruits, the State is unusually blessed because of its natural adaptability to the raising of sugar beets. This crop, which grows so readily in our soils, provides a most

Sugar Beets and Live-Stock excellent money crop and fits well into our general scheme of farming. It forms a most desirable economic unit in our live-stock farms, insuring adequate utilization of labor machinery and other equipment, besides its emphasizing of the most advanced practices in soil culture, which practices naturally have an effect upon all the procedure on the farm.

We must do more for the range manager. Utah is most magnificently adapted to sheep and wool growing.

The Sheep and Range Industry We urgently need, however, more scientific management of the flocks as regards breeding, feeding, and lambing, and better sorting and grading of the wool. Even seemingly very trivial reforms in these practices will result in surprisingly larger returns to the wool grower.

We have reached the state in the development of our sheep and cattle industry and in the development of our range, when we must do our grazing (in measure) under fence.

The Range Under Fence The development of dry-farming, the national limitations necessarily imposed upon our stock growers and the present prices for meat and wool, make fencing of our natural forage lands a thing of the very near future. We need, therefore, a scientific determination of all the facts regarding the range in order that the small, as well as the large, holder may reap the largest possible rewards from his industry.

The Government has recently passed legislation effecting rural credit, which will be a decided factor in stabilizing our agriculture and insuring a larger return of the legitimate income of the farm to the farmer. Money,

Rural Credit hereafter, will be more easily obtainable for legitimate agricultural development. Before rural credit comes as it should to the good farmer, there must occur a co-operation of effort which is most urgently needed. The College is now engaged in a campaign of education designed to bring to the Utah farmers the benefits of the recent legislation at the earliest possible moment.

The farming profession was never in a more satisfactory condition, nor never had more brilliant prospects.

Undoubtedly there will be worked out in America, and in Utah especially we think, a rural life which will draw to it in larger and larger measure as the years go on, the strongest citizens of the commonwealth. In such fashion most surely will the ideals of our democracy be served.

One of the intimate concerns of the College and of education in general is the matter of satisfactory financial recognition of teachers. The proper development of education on demands the retention in the teaching profession of strong men and women. Throughout America good teachers are paid too little. Especially of recent years is it true that salaries have not kept pace with the increasing cost of living. There is need of immediate attention to the matter of increasing the salaries of the worthy members of the faculty of the College in order that they may feel free to devote themselves without reserve to the educational tasks at hand, and feel justified in further investment in training.

The Salaries
of Teachers

It is notable that the faculty of the College is the best trained group of men and women engaged in Agricultural College work in the West. Such devotion to ideals should be adequately recognized. I have no recommendations of a special nature to make at this time, realizing as I do that the income of the College is now not sufficient to carry into effect any considerable raise in our present standard of salaries.

It is gratifying to report the healthy sentiment in the Student Body. A most vigorous and clean public life prevails here, which provides a discipline in citizenship which is a contribution to the life of the students comparable in its value to the regular class room instruction. The club life in the Col-

The Students

lege is orderly. Student Body activities, of a literary, debating, athletic, and social character are encouraged, and it gives me genuine satisfaction to report the practically unanimous high regard maintained by all such activities of the students, for the ideals and the general welfare of the College. A real college patriotism exists among the students of the Institution.

The students are mature and thoughtful men and women. The restraints which are so necessary in the case of less mature students are quite unnecessary here. In

September of this year a joint committee of the Faculty and Student Body was appointed to determine the measure of self-government which the students desired to assume. This committee is still at work. Without hampering the students with unnecessary machinery of discipline, and other related matters among themselves, it is hoped that all excessive restraints which are meant for the few, may be removed and the honor system be effective in the life of the institution just as completely as the responsible students are willing to assume responsibility for its operation.

There is tabulated below the needs of the College. In stating these for the consideration of the Board, I apprehend no question as regards their utility. Our growth and our immediate prospects are such that the additions to our equipment stated below will enable us to develop as we should and as the truly stupendous character of the agriculture of our State merits. We are earnestly husbanding the large resource of education placed in our charge.

The following list includes the immediate needs of the Agricultural College during the next biennium. I cannot too strongly advise the importance of the requests listed below:

1. Dairy, and Live-stock Building.....	\$ 55,000.00
2. Increased appropriation for Experiment Station (\$2,500.00 in 1917; \$5,000.00 in 1918)	7,500.00
3. Home Economics Practice House (Lab. and Equipment)	10,000.00
4. Horse Barn	8,000.00
5. Lavatories, Mechanic Arts Building.....	2,000.00
6. Granary	2,000.00
7. Live-stock	3,000.00
8. Pasture	3,000.00
9. Remodeling Dairy Barn, Milk House and Cattle Sheds	2,000.00
10. Irrigation and Farm Machinery Building	40,000.00
11. Extension of Heating System (tunnels and piping)	600.00
12. Water Connections at Barn.....	500.00
13. Repair Shop for Superintendent of Buildings	1,500.00

14. Plant Breeding, Plant Disease and Insect Control House	6,000.00
15. New Power and Light Lines and Iron Posts	2,500.00
16.. Completion of Heating Plant.....	18,000.00
	<u>\$161,600.00</u>

The following is a summary of the needs of the Branch of the Agricultural College for the next biennium. For more detailed explanation of these needs you are referred to the Principal's report herewith included. The deficit mentioned in the Principal's report has been accumulating, I understand, for the past three years, and was allowed by the previous administration because of the urgent necessity of the work. It now becomes my plain duty to recommend an increase, by special appropriation, of \$10,000.00 per year to the income of the Branch of the Agricultural College in order that the institution may serve the growing population of Southern Utah as it should.

Following is a summary of the needs of the Branch of the Agricultural College for the next biennium:

Repair and Improvement of old buildings.....	\$ 7,825.00
New Buildings	4,900.00
Campus Improvements	5,825.00
Furniture and Equipment.....	21,295.00
Total	<u>\$ 39,845.00</u>
Special Additional Maintenance.....	20,000.00
Deficit (approximately)	13,000.00
Total	<u>72,845.00</u>

Permit me at this time to express my appreciation of the generous and loyal treatment which has characterized the activities of the Board with relation to the interests of the College. I have found the most liberal and unprejudiced attitude constantly prevailing on the part of the Board, both individually and collectively. I esteem it a genuine privilege to be the instrument of the Board appointed to carry out the policies which mean so much in the development of our State.

Very respectfully submitted,

E. G. PETERSON,
President.

Directors of Schools and Divisions.

THE SCHOOL OF AGRICULTURE.

To the President of the College:

Sir: Permit me to make to you the following report of the School of Agriculture of the Utah Agricultural College and to express my pleasure in reporting the excellent condition of the organization as left by the preceding Director, Dr. E. D. Ball.

In general the School of Agriculture is in very good condition. The present Director has found things very well organized and everything in very satisfactory shape.

The enrollment in agriculture is gratifying. The majority of the old students are back. The upper classes, as well as the incoming class, all indicate growth. The

Students senior class is not so large as last year's senior class, due to the fact that most of the students who entered three years ago expect to go out on the four-year basis. The majority of the students are regular. Only a small number are practical course students.

The work given in agriculture covers a wide scope, and is fundamental. It is difficult, however, for students to get the fundamental scientific courses and have all of

Scope of Work the agriculture they wish or ought to have, under our present schedule. Students also have little or no opportunity of coming into sufficiently close contact with actual agricultural operations to give them the experience they quite generally desire. To make their work more effective in these regards the following recommendations are made:

1. Training in agriculture is essentially scientific. To be efficient it must consist, to a great degree, of laboratory work. At the present time the laboratory work is done for the most part after 1:30 p. m. Saturday afternoon is broken into by athletic sports about half the time. As a result, students find it difficult to keep such work up.

Recom-
mendations

Most students prefer to elect a lecture course to a laboratory course coming on Saturday afternoon. Thursday afternoon is given over to military drill. That leaves but three afternoons on which laboratory may be taken. As a result, all manner of conflicts arise. The laboratory courses, by far the most important for agricultural students, are thus made inaccessible. This condition is deplorable. If our students would be trained for efficiency they must be given every opportunity and encouragement to get into the laboratory courses. This means that the time allotted to laboratory work must be greatly increased. It is, therefore, most earnestly recommended that regular class work be given on Monday, as well as the other five days of the week, with a possible half holiday Saturday afternoon. The Director has talked to a large number of students and faculty members who approve of the plan most highly. It is reported that Monday is largely wasted by a great many students under the present system. The proposed change would help materially in overcoming conflicts. It is also recommended that one section of laboratory for some of the classes requiring two or more sections, be scheduled to come in the morning period. It is not right that so much expensive equipment should be available during so short a period of the day.

II. It is also recommended that the main building, or such parts of it as are necessary, be rewired and arrangements made so that the library may be used by students at night. Many students, and particularly those who do not have commodious rooms, would profit immensely by such a plan. The splendid library would also be made much more available. It is felt that it should be open from eight o'clock in the morning until ten o'clock at night.

III. At the present time it is impossible for students or farmers to come to the College and get work in cheese-making, or much work in butter-making and kindred dairy subjects. Yet the dairy industry is one of the largest and one of the most fundamental in the State. This condition cannot be remedied until quarters are provided for such work. A dairy building is needed very badly. Such a building should be of inestimable value to the State.

IV. About four-fifths of the total area of the State

of Utah consists of land unsuitable for cultivation. These millions of acres are valuable, however, as range land, and that is their chief value. A great many people in the State are using these range lands, and a great many desire to acquaint themselves with the problems of range management. We have, as yet, no one at the College concerned with this tremendous part of the State's resources. Cattlemen are losing a great deal of profits; the State is losing a great deal of revenue, and the State's resources to a considerable degree are being mismanaged and reduced in value, due to ignorance of the fundamental problems of range management. To meet this condition a department of range management should be organized, to study range conditions, and to give instruction in this important branch of agriculture.

V. The College is also in sore need of an insectary and vivarium where the various insect pests and fungus diseases, which are destroying the crops of the farmers of the State to the extent of more than a million of dollars every year, can be studied under controlled conditions; where the growing season for the study of such pests can be increased to twelve months instead of about five; where farmers and students who are desirous of studying the habits and control of such pests can have access to them in the living, growing condition. Such quarters would more than pay for themselves in a very few years by the increase in crop production which information gained by means of them would bring about.

VI. - To supplement the courses in agriculture a provision should be made whereby students, while at College and during summer vacations, might get a wider experience in technical agricultural work. The demand is always for men of experience. Due to lack of equipment it is impossible for students to get experience at the College in several of the practical branches of agriculture. Moreover, there are many well stocked and well managed farms in Utah where students could get experience of inestimable value. It is earnestly recommended that an arrangement be effected whereby students may get the opportunity of spending a few weeks at least at such a farm.

Respectfully submitted,

GEORGE R. HILL, JR.,
Director, School of Agriculture.

THE SCHOOL OF AGRICULTURAL ENGINEERING AND MECHANIC ARTS.

To the President of the College:

Sir: Some changes have occurred in the organization of the schools since the report of two years ago, as follows: In August, of this year, the present head of the schools was appointed to take the place of Dr. F. S. Harris, who had been chosen Director of the Experiment Station. Due to the fact that Dr. E. G. Peterson's duties as Director of the Extension work occupied so much of his time, and the fact that his duties called him away from Logan, the work in Rural Sanitation was assigned to Dr. Titus and Dr. Greaves. Professor O. W. Israelsen has been added to the teaching force in the Department of Irrigation and Drainage, as Assistant Professor of Irrigation and Drainage.

This year we are, at this early date, practically equal in registration to last year. We can expect quite a number more regular students at the second term, and as yet the Winter Course work has not begun.

The work in Agricultural Engineering and Mechanic Arts is being broadened in its scope, and more stress is being laid on Farm blacksmithing and repair work, on house building and contracting, and the construction of up-to-date farm buildings. The work in Farm Mechanics is very popular as regards the operation and care of all kinds of Farm Machinery, including the gas and oil engine and the tractor. Two years ago the course in automobiles was introduced, and its growth and popularity have steadily increased. Its growth from now on will be determined entirely upon whether additional room and facilities can be provided for it. At present the machine shop will scarcely accommodate one machine and at present the department has but one to work upon, and that is many years out of date.

We are also in dire need of a sanitary toilet room and locker room. This can be very adequately supplied by the raising of the walls over the present stock room, which would provide a very sanitary and pleasant room at a cost of about \$1,500.00.

The estimate on the necessary plumbing work will be found in the report of Mr. Charles Batt.

In order to make the work in Irrigation and Drainage what it should be, by emphasizing the practical side of the work more, we have felt very keenly the need of an outdoor field laboratory where the various kinds of field measuring apparatus used in irrigation work might be studied, and the different instruments compared as to their accuracy and general utility. For this purpose two small concrete reservoirs and accessories will be needed which will cost approximately \$2,000.00. We need an assistant in automobile work, and one for mechanical drawing.

The future for the work looks very bright, and with a proper correlation of the various departments the work is bound to grow.

While the fields embraced in the different departments are yet quite new and unexplored, we are gradually systematizing and standardizing the work so that each year sees a greater appreciation for it.

Respectfully submitted,

RAY B. WEST,

Director, School of Agricultural
Engineering and Mechanic Arts.

THE SCHOOL OF COMMERCE.

To the President of the College:

Sir: I beg to submit herewith a report of the School of Commerce.

The fact that the graduates of the School of Commerce find ready employment is proof that the school fills a place in the community life of the State. Many of the students in commerce have attained prominence in commercial affairs of the Mountain States.

A great field of work lies right at our doors. The business men of the State need extension work as badly as the farmers. Business efficiency is becoming an important national problem, and it lies with the colleges to help solve it.

If funds could be provided, it would be profitable and

practicable to offer to the business men of the State expert advice in accounting and business practice and applied economics. This broad field is untouched at present and incalculable service could be rendered by competent instruction. As things stand today, not much additional service can be expected from the teaching staff of the School of Commerce, as it is already carrying a load.

The work covered by this School lends itself readily to instruction by extension methods and it is expanding more rapidly than the instructional force is able to provide for.

Respectfully submitted,

GEORGE THOMAS,

Director, School of Commerce.

SCHOOL OF GENERAL SCIENCE.

To the President of the College:

Sir: The following table gives the enrollment in the School of General Science for the last three years:

	Grad.	Sens.	Juns.	Sophs.	Fresh.	Prac.	Total
1914-15	6	7	9	10	31	22	85
1915-16	5	13	10	14	58	5	105
1916-17	5	9	15	29	37	17	112

Students who have not decided what their life work is to be when they enter the College, are usually assigned for registration to the School of General Science. Their course is planned along broad lines, and they are encouraged to definitely decide what they expect to follow as soon as possible. The spirit of the Institution usually carries them over into the industrial lines, and they are often found registering the following years in the schools of Agriculture or Home Economics, Commerce or Agricultural Engineering and Mechanic Arts, and finally graduating from these schools.

There are some students, however, who expect to follow law or medicine, and the best professional schools of the country require of their entering students the completion of a college course. Where these prospective lawyers and doctors expect to practice in rural communities, this general preparatory course can well be taken at the Agricultural College. Our

strong faculty and well equipped laboratories, although provided primarily for the technical students, are available, and in addition to these science courses, very good work in English, economics, history, applied art, etc., is to be had.

It is, no doubt, due to the fact that the technical and immediately useful courses of the Institution are preceded by the courses offered in the School of General Science that the Institution is something more than a mere trade school, thumb rules and empiricism being replaced by well established and thoroughly understood laws, and the attempt is made by the Institution to help men prepare themselves not only to make a living but also to train them so that they may be able to enjoy life in full measure. It is the School of General Science that is providing the cultural side of the training of all of the students of the College.

Respectfully submitted,

FRANKLIN L. WEST,
Director, School of General Science.

THE SCHOOL OF HOME ECONOMICS.

To the President of the College:

Sir: The School of Home Economics has made a satisfactory growth during the past biennium. There has been a substantial increase each year in the number of students studying the household arts. This year we have a total registration of 200 in the School of Home Economics. Ninety per cent of all the girls at the Institution are enrolled for one or more courses in this division.

Forty-six students are registered for work in Home Construction, 101 are enrolled in the six courses offered this year in Foods and Dietetics, 135 are studying Domestic Arts, 160 are enrolled for Fine and Applied Arts, and 100 in Music.

The Departments of Art and Music will render separate reports; the reports of the Departments of Foods and Dietetics, Domestic Art, and Home Construction and Sanitation are also given separately.

The School of Home Economics entered upon a new field of usefulness this year in establishing a course in Mothercraft. The course is conducted by Dr. R. O. Porter, and is recognized as one of the most valuable courses offered at the Institution. The course includes the study of personal hygiene, physiology,

the functions of the reproductive organs, care and feeding of infants, nursing and general sick room procedure. A baby conference is held every week, and members of the class are assigned as nurses, under the direction of the physician, to cases of children's diseases. If funds are available for the employment of another instructor, additional work in related fields will be organized next year.

The School of Home Economics affords a liberal, practical, scientific, and technical training for women. It should be considered co-ordinate with the School of Agriculture. Education for women is as necessary as education for men, and the State should provide for women the same opportunities for intellectual growth that it has so generously provided for men. The time may come when investigations concerning the nutrition of man and diets for children will be regarded as equal in importance to the study of balanced rations for cattle. A Home Economics Experiment Station may then be established.

Respectfully submitted,

C. W. PORTER,

Director, School of Home Economics.

THE SUMMER SCHOOL.

To the President of the College:

Sir: The following is my report of the Summer School for the year 1916, as per your request of recent date.

The Summer School of the Utah Agricultural College has the very important function of placing before the teachers of the State an opportunity for instruction in Agriculture, Home Economics, Mechanic Arts, and such other subjects as are distinctive of the Institution. Not only this, it accommodates those students of our own and other colleges of the State, who are desirous of securing credit, to aid in completing their college courses earlier than would be possible without the summer school. I am of the opinion that the time is not far distant when we shall find it profitable to continue the summer session through twelve weeks rather than six, as at present.

The session last year was 20% larger than the year before, and, from the point of efficiency, was very satisfactory.

Success
Recent
Session

Those in attendance expressed considerable satisfaction with the work of the school. Comparing the work done and noting the general atmosphere of the student body, I believe that the school was quite successful.

For a number of years past the Summer School, under the direction of the President, has secured the services of a number of lectures of national repute. This procedure has added to the expense of the school very materially, but has increased its efficiency.

This last year a deficit was created, due to the policy of excusing a number of faculty members and having to hire instructors to take their places. For example: both teachers in Physical Education were excused. Substitutes cost us \$160.00.

Conditions All of the teachers in Home Economics were excused. Substitutes cost us \$150.00. The teacher in Wood-work, the teacher in Economics, the teacher in Vocal Music, and in Geology were excused and substitutes cost us amounts varying from \$100.00 down to \$60.00. In the last case Professor Peterson aided the instructor, very much to the advantage of the class work. As pointed out above, this lowers the tone of the work in the estimation of the students, especially in a subject like Mechanic Arts, Home Economics, or Agriculture. These are supposed to be the very subjects that we are best prepared to give, and when teachers come here for special work in those departments and find immature people in charge they are somewhat disappointed. Teachers who come to Summer School object to being placed under instructors.

In view of these and other conditions, I have the following suggestions, or recommendations to make: First, that we secure a strong corps of teachers from the College faculty for each session. Those selected should receive some additional compensation over that received by those who are excused from Summer School. Second, that one or more lecturers of good standing be employed each year. These lecturers should be selected by the reason of their fitness to do the work distinctive of the school. Third, that additional extension classes in Education be arranged for, with the University of Utah. Those conducted last year were the Reading and Study Course. Psychology, Principles of Education, and History of Educa-

Recommendations

cation. We need at least one additional class in advanced Education and Psychology. Fourth, as soon as plans have been perfected for the 1917 Summer Session, all teachers' institutes in the State should be visited by some representative of the College faculty, who will carry directly to them some word concerning our Summer School. I believe that the College should be brought into close contact with the teachers of the State.

Respectfully submitted,

JAMES H. LINFORD,

Director, Summer School.

THE EXPERIMENT STATION.

To the President of the College:

Sir: I have the honor to submit herewith a report of the Agricultural Experiment Station for the last biennium. During this period the work of the Station has steadily progressed. The workers in every department have been faithful in the prosecution of research of a high grade and a great deal of data which is of decided scientific importance, as well as of incalculable value to the practical farmer, have been accumulated.

The one lamentable fact in connection with the work is the resignation of a number of men who were rendering valuable service to the agricultural interests of the State. These resignations have resulted largely from the fact that our scant funds have prevented the payment of salaries equal to those of many other similar institutions. In the best interest of the State every effort should be made in the future to raise the salaries of Experiment Station workers sufficiently so that the best men will not be taken away. The usefulness of the work justifies considerable effort in this direction.

The discoveries of the Experiment Station should be the foundation for agricultural instruction in the College, as well as the basis for the teachings of the Extension service. The

Importance of Experimental Work	Experiment Station is of particular importance to a new state like ours where climatic, soil, and market conditions are different from those in many other parts of the world, where fairly satisfactory methods of handling the farm have
---------------------------------------	--

been determined from ages of experience. In new regions old methods cannot always be used; and if the slow school of experience must be depended upon, it will require many generations to discover the facts about agriculture which scientific experimentation could discover in a comparatively few years.

The State can make no better investment than to spend money for experiments in agriculture. The few thousand dollars spent investigating the principles of dry-farming, for instance, have already resulted in a return to the State of many times the total amount expended by it for all agricultural purposes. The returns from irrigation investigations are no less striking. The work in plant-disease and insect-pest control done by the Experiment Station staff has saved the farmers an almost unbelievable amount of money. In every department results are being obtained which will mean dollars to the farmers.

For the purpose of conducting the work more effectively, the Station staff is organized into the following departments:

Organization of Staff	Agronomy, Animal Husbandry, Chemistry and Bacteriology, Entomology, Geology, Horticulture, Irrigation and Drainage, Meteorology, Plant Pathology, Poultry Husbandry, and Veterinary Science.
--------------------------	--

Each department works on projects which must be previously outlined in detail and approved by the Director.

Report of Experimental Work	In all of the departments the work has continued unhindered except in cases where the resignation of a worker has, for the time being, made it necessary to suspend part of the investigations. The bulk of the experimental work has been prosecuted with the greatest diligence. A number of projects have been completed and the results published, or prepared for publication; while several new projects have been launched.
-----------------------------------	--

A general description of these experiments is given below. Ever since the founding of the Experiment Station a considerable part of its energies has been devoted to a study of irrigation problems. At first the investigations were of a general nature, but during the last few years an attempt has been made to determine in greater detail the foundation factors involved in the problem.

At Greenville the experiments have been continued under

previously described plans, except that the work with wheat has been completed and experiments with oats begun. The investigations on the irrigation of alfalfa have also been considerably extended.

Four years' results for wheat show the importance of irrigation water during the early stages of growth. The best method of supplying water was to give three irrigations, of about five inches each, applied at the five-leaf, the boot, and the bloom stages.

Five years' results each for potatoes and sugar beets are now available and will be published in the near future. The work of six years with corn is also ready for publication.

During the last two or three years the activities have been extended into the State in an attempt to discover the best methods of using irrigation water under the various soil and climatic conditions. In Sevier County tests have been made with alfalfa, sugar beets, potatoes, and small grains on the duty of water and the period of application. It has been found that the period of application is very important in determining the duty.

At Malone, Millard County, where water has been pumped from a well sixty feet deep, it was found that water can be pumped from this depth with profit where it is used economically as a supplement to the natural precipitation. A yield of 300 bushels of potatoes was secured with twelve inches of irrigation water.

At Cedar City early spring water and deep well water are being used. Good returns can be secured with considerably less water than is ordinarily used in the district.

Fourteen years' results in the breeding of sugar beets have been obtained and it is believed a strain of seed has been developed which is well adapted to Utah conditions. In the course of the experiments many observations on the nature of sugar beets were recorded. These made possible the determinations of the correlations in sugar beets used in a recently-published article on this subject.

Investigations have been continued on the commercial production of sugar beet seed in Utah. The results show the State to be well adapted to beet seed production. Partly as a result of the work of the Station and partly because of the difficulty of securing foreign seed, the United States Beet Seed

Company was recently formed, embracing all the sugar companies in the United States as members. This company last year raised several thousand acres of beet seed, and indications are that within a very few years most of the seed needed in this country will be produced at home.

The breeding of potatoes has been continued according to outlines given in earlier reports. Considerable progress has been made, and in the spring of 1916 an improved commercial strain of potatoes was distributed to farmers under the name of "Utah Number 1." Reports from those who secured seed indicate this to be a desirable strain for Utah conditions.

The experiments to show the effect of alkali on plant growth have been continued and somewhat extended. Thousands of tests are being made to determine the factors which influence the difference in toxicity of alkali in different soils.

Analyses have been made of a number of typical alkali soils from different parts of the State, in order to find the concentration of the various salts which crops can endure under field conditions. This work is preparatory to an investigation of methods of handling alkali soils. Work on the origin of alkali is being continued. It has been found that most of the alkali of the State comes from certain rocks of recent geological origin.

A study of the principles underlying the successful practice of dry-farming is being continued. At the Nephi Substation, where the most important part of the work is located, an attempt is being made to separate the various factors involved and study them individually. At Cedar City and Kanab experiments of less complexity are being conducted, while at Cedar Valley an attempt has been made to find what crops will grow on a heavy grease-wood soil. The farm in San Juan County was returned to the county commissioners as it had fulfilled the object of its establishment: namely, to demonstrate that dry-farm crops can be profitably raised in that section of the State.

There are a number of rather large areas in the State where dry-farming should be investigated in order to learn whether it can be successfully practised. The lack of funds at present prevents the establishment of experimental farms in these areas.

During the past two years rather extensive investigations of the ground water resources of Utah, especially in Cache, Weber, Davis, Utah, Sanpete, Sevier, Millard, and Box Elder Counties, have been conducted. The areas which give promise of economic ground water supplies are being mapped and a study is being made of the source of the ground water, together with its probable extent. These investigations warrant the conclusion that the irrigated area of the State may be considerably extended by the use of ground water.

An investigation is being made of the composition of the various waters of the State used for irrigation, in an attempt to find which waters carry alkali in quantities sufficient to render their use for irrigation objectionable. Samples have already been taken from many of the most important streams and from numerous wells. When this work is completed it will furnish a body of helpful information to those interested in the development of irrigation.

In work done on the composition of some of the native plants of Utah, it was found that one ton of sage brush ash, as ordinarily prepared, contains about 108 pounds of potassium and is worth, at the present price of potassium, about \$40.00 to the ton. Greasewood ash under the same conditions was found to contain 252 pounds of potash to the ton, and to be worth \$95.00. In these times of scant potash supply a possible source is here suggested.

Some very interesting results are being obtained from a study of bacteria found in the soil. The application of manure up to twenty-five tons to the acre increased the number of bacteria, and the ammonifying, nitrifying, and nitrogen-fixing power of the soil. The greatest increase for each ton of manure was found where five tons to the acre were applied. The application of water to the soil increased its bacterial activities, the effect being more pronounced in manured than in unmanured soil. When excessive quantities of water were applied the nitrates were leached below the feeding zone of crops and a decreased yield resulted.

In a study of the toxicity of the chlorides, nitrates, sulphates, and carbonates of sodium, potassium, calcium, mag-

nesium, manganese, and iron, as determined by ammonification, it was found that the toxicity is largely the result of the electro-negative ion and as a general rule, to which there are exceptions, the chlorides are the most toxic, followed by nitrates, sulphates, and carbonates in the order named. The compounds which are most active in stimulating higher plants are also most active in stimulating bacteria. It is suggested that at least part of the stimulation in the higher plants results from the extra food furnished by the stimulated activity of bacteria.

A study of the effect of arsenic in the soil on the nitrogen-fixing organisms showed that all forms of arsenic, except Paris Green, stimulate nitrogen-fixation, but not to so great an extent as it does nitrifying power. Arsenic stimulates the organisms only in the soil; in solutions it is toxic in all concentrations.

The study of frost injury has been continued, and a number of very interesting results obtained. Some of these have been published during the last year. Considerable attention

Frost Investigations has been given to a study of the temperatures required to kill fruit buds. At first this was done on branches taken to the laboratory and subjected to various degrees of cold, after which the injury was determined by a study of the number of blackened buds. In the spring of 1916 a special apparatus was constructed which made it possible to subject an entire tree to any desired temperature. This gave valuable data, but the late spring frosts made it impossible to use matured fruit as a check on the results since all the fruit was killed by this frost.

The loss to crops of the State every year by insects is enormous. The methods of controlling some of these is well known, while methods of handling others has Insect Injury not yet been discovered. A number of the latter class are being worked on.

Work on the wheat straw worm seems to indicate that it can best be controlled by regulating the time of planting the grain. Considerable work still remains to be done, however, with this insect.

A study of the insects affecting alfalfa seed is being conducted in Emery County. The severe frosts and cold nights during the past season have interfered somewhat with the experiments, but the indications are that these insects can best be controlled by cultural methods.

The late spring frosts interfered with the investigations

of the apple leaf roller during the past season, but enough work has already been done to show fairly well the sprays which control it most effectively.

In the study of sugar beet insects attention has been directed to nematode injury. This can be handled best by a rotation of crops.

During the last two years a great deal of injury has been done by grasshoppers in various parts of the State and the Station has given considerable help in controlling the pest.

Work on the control of the alfalfa weevil has been continued, although the methods already advocated by the Station have been found adequate where properly applied.

Work is being continued on the best rations for Utah dairy cows. The use of silage in an alfalfa-grain ration has been given special consideration; results indicate that corn silage will probably play quite a part in the feeding of Utah's dairy cows in the future. The cows relish this feed and it has a decided stimulating effect on the flow of milk. About three pounds of corn silage have been found equal to one pound of alfalfa hay. The next phase of this subject to be investigated will be to determine the best quantity of grain to include in the ration.

An experiment on rations for hogs is also under way. A comparison is being made of the feeding value of chopped and steam-rolled barley with the whole grain. A study of the feeding value of beet molasses for hogs is also in progress.

The breeding for egg production has been continued about as in previous years, careful individual records being kept of all birds in this experiment. This test now consists of eight flocks, varying in age from one to eight years. An additional year's record of these flocks furnishes further proof that any single year, and especially the first, does not measure the productivity of a hen, and, therefore, should be a minor consideration in the selection of breeders. One of the hens of the 1913 flock has finished the second year with a total of 246 eggs, while her first-year record was only 40. The average of all flocks was low in 1914, while for the year before and the year after the average production was much higher—although the methods of feeding and management each year were the same. In the older flocks, which are being held to determine the length of life of this

strain of fowls, there are twenty-one hens that had laid over 700 eggs, five of these having laid over 800 eggs and two over 900.

The diseases of potatoes have been given considerable study during the last two years. In plots at the Experiment Station, together with laboratory studies, the effect of various treatments on Rhizoctonia has been investigated. Field surveys are being made in co-operation with farmers in a number of parts of the State to determine the effect of various treatments on the control of the Fusarium Wilt, as well as Rhizoctonia. Proper rotation of crops, together with care in selection and treatment of seed, enables the farmer to control these diseases to a considerable extent. Newly-broken alfalfa land seems to be particularly well adapted to the control of these diseases.

The California Peach Blight, which did considerable damage a number of years ago, has not been so troublesome during the last two years, due to weather conditions. However, experiments are being continued on this disease.

A plant-disease survey of the State in co-operation with the United States Department of Agriculture is progressing. This is giving valuable data on the regions infested by various diseases.

The survey of the pastures of the State to determine the kinds of grasses that grow best under different soil and climatic conditions is being continued. It is planned eventually to extend this study to range conditions.

Since the Southern Utah Experiment Farm was turned over to the Experiment Station, the investigations have demonstrated that the farm is not well adapted to purposes of experimentation. The irregularity of the soil, the nearness of ground water, and a number of other factors combine to render this particular farm unfavorable to the experiments needed by the farmers of Southern Utah. It is suggested, therefore, that the next legislature make provision for disposing of this farm.

In addition to the lines of work already being studied, a number of other phases of agriculture should be investigated as fast as the State is prepared to put funds into the projects. A study should be made of the marketing conditions to determine on which markets the farm products of the State can

compete to best advantage. It is probable that at the present time farmers are trying to sell goods on eastern markets where they cannot successfully compete with eastern producers. On the other hand, there are probably crops that could be raised to much better advantage. Thus the whole question of what phases of agriculture the farmers of the State ought to emphasize should be thoroughly investigated. This question can be successfully studied only by a man with thorough training; such a man would demand a salary commensurate with his ability.

The results of irrigation experiments conducted on relatively small areas in one or two localities should be carried to all parts of the State and tried under various climatic and soil conditions in order to find, in detail, the best way to use water in each locality. This type of experimentation is expensive and can be carried on with present funds only to a limited extent. Additional funds should be provided as soon as possible in order to make this work of greatest service. A thorough study should be made of all the available sources of underground water for irrigation purposes, and aid should be given the various canal companies in putting their systems on the most up-to-date basis. To accomplish these very necessary lines of work more funds will be required.

A thorough survey of the agricultural resources of the State should be made so that these resources may become productive as soon as possible. At present probably not more than four per cent of the area of the State is being farmed. It is well known that other lands can be tilled. These tillable soils should be investigated by some State agency so the landless man who is desirous of becoming a farmer may find land known to be of economic value. Particular attention should be directed to the reclamation of alkali lands, some of which are full of promise.

The greater part of the area of Utah will probably always be devoted to range for cattle and sheep, and yet no work has so far been undertaken by the Experiment Station on range management. This is doubtless one of the problems most in need of solution. An investigation of the forage plants that could be raised most profitably on the desert and mountain ranges, together with methods of keeping these ranges in the highest possible state of production, should be taken up.

Utah is located at considerable distance from the great markets of the country, consequently the freight rates on raw products of the farm to these markets are almost prohibitive. The way in which she can compete with regions more centrally located is to convert raw materials into finished products. This necessity, taken with the fact that in the State water power and fuel are cheap, suggests the desirability of establishing manufacturing plants in order to most economically utilize as many as possible of the products of the farm. The canning, milling, packing, and refining industries should be given every possible opportunity, and if funds were available it would be very desirable to conduct at the Experiment Station investigations that would tend to promote the manufacture of agricultural products into a form more readily disposed of. This would also help to found new industries that would add wealth to the State.

The following publications have been issued from the Station during the last two years:

Bulletin No. 136, The Commercial Production of Sugar Beet Seed in Utah—F. S. Harris.

Bulletin No. 137, The Quality of Home Grown vs. Imported Wheat—Robert Stewart and C. T. Hirst.

Bulletin No. 138, How to Control the Grasshoppers—E. D. Ball.

Bulletin No. 139, The movement of Soluble Salts with the Soil Moisture—F. S. Harris.

Publications Bulletin No. 140, The Summer Pruning of a Young Bearing Orchard—L. D. Batchelor and W. E. Goodspeed.

Bulletin No. 141, Variation in Minimum Temperatures Due to the Topography of a Mountain Valley in its Relation to Fruit-Growing—L. D. Batchelor and F. L. West.

Bulletin No. 142, Irrigation of Peaches—L. D. Batchelor.

Bulletin No. 143, Fruit Tree Root Systems,—Spread and Depth—A. B. Ballantyne.

Bulletin No. 144, Water Table Variations—Causes and Effects—A. B. Ballantyne.

Bulletin No. 145, Soil Alkali Studies—F. S. Harris.

Bulletin No. 146, The Irrigation of Wheat—F. S. Harris.

Bulletin No. 147, Alkali Content of Irrigation Waters—Robert Stewart and C. T. Hirst.

Circular No. 18, Better Horses for Utah—W. E. Carroll.

Circular No. 19, Licensed Stallions in Utah in 1915—W. E. Carroll.

Circular No. 20, Capsule Method of Breeding Mares—W. E. Carroll.

Circular No. 21, Dry-Farming in Utah—F. S. Harris and A. D. Ellison.

Published in Scientific Journals:

1. Stimulating Influence of Arsenic upon the Nitrogen-fixing Organisms of the Soil—J. E. Greaves. Jour. Agr. Research, Vol. VI, No. 11, June 12, 1916.

2. Influence of Barnyard Manure and Water upon the Bacterial Activities of the Soil—J. E. Greaves and E. G. Carter, Jour. Agr. Research, Vol. VI, No. 23, September 4, 1916.

3. The Influence of Salts on the Bacterial Activity of the Soil—J. E. Greaves, Soil Science, November, 1916.

4. Nitrus Nitrogen in Irrigated Soils—J. E. Greaves, Soil Science, December, 1916.

5. The Origin of the "Nitre Spots" in Certain Western Soils—Robert Stewart and William Peterson. Jour. Amer. Soc. of Agronomy, Vol. VI, No. 6, 1915.

6. The Nitric Nitrogen Content of the Country Rock—Robert Stewart and William Peterson, Soil Science, Vol. II, pp. 345-362, October, 1916.

7. Effect of Alkali Salts in Soils on the Germination and Growth of Crops—F. S. Harris. Jour. Agr. Research, Vol. V, No. 1, pp. 1-53, 1915.

8. Factors Effecting the Evaporation of Moisture from the Soil—F. S. Harris and J. S. Robinson, Jour. Agr. Research, Vol. VII, pp. 439-461, December, 1916.

9. Some Correlations in Sugar Beets—F. S. Harris and J. C. Hogenson, Genetics, Vol. I, pp. 334-347, July, 1916.

Dr. E. D. Ball, who had been Director of the Station since 1907, resigned in July, 1916, and became State Entomologist of Wisconsin. He was succeeded as Director by the writer. Others who have resigned from the staff are: Dr. L. D. Batchelor, Prof. W. H. Homer, Jr., Prof. E. P. Taylor, Dr. E. G. Titus, Dr. Robert Stewart, Messrs. L. A. Smith, A. D. Egbert, John Stewart, H. W. Stucki, and Miss Violet Greenhalgh.

The following appointments were made during the biennium: W. H. Homer, Jr., Acting Horticulturist; E. P. Taylor, Horticulturist; A. F. Bracken, Assistant Agronomist; E. G.

Carter, Assistant Chemist and Bacteriologist; D. W. Pittman, Assistant Agronomist; O. W. Israelsen, Irrigation and Drainage; H. P. Anderson, Assistant Chemist and Bacteriologist; O. P. Madsen, Assistant Poultryman; N. E. Edlefsen, Assistant Meteorologist; W. J. Merrill, Director's Secretary; and Miss Carrie Thomas, Assistant in the Mailing Room.

The Experiment Station has for a number of years felt itself in need of greater funds to meet the constantly-increasing demands that are made on it. Notwithstanding the rapid growth made in the State, the funds allotted to the Experiment

Station have remained stationary for a number of years. This has made it impossible to

take up many of the very important questions in agriculture that need investigation, and it has resulted in the loss of some of our best men, because no funds were available to raise their salaries to meet offers made by other institutions. At the last legislature a bill was passed, but vetoed by the Governor, providing for an increased appropriation to the Station of \$2,500.00 each year until the State appropriated \$25,000.00 a year instead of \$15,000.00, which it now appropriates. A similar bill should be presented to the present legislature. This would enable the work to have a modest but normal growth, and the money spent by the State for such a purpose would be returned many times.

Respectfully submitted,

F. S. HARRIS,

Director, Experiment Station.

THE EXTENSION DIVISION.

To the President of the College:

Sir: The following is a report of the organization and activities of the Extension Division for the period from July 1, 1914, to October 1, 1916.

Extension work in Utah during the last two years has had a steady, healthy growth. Work has been pushed in a vigorous way until the whole State has felt the influence of the development. Every county, and practically every town, in Utah has been visited, and in most of them co-operative work is being carried forward.

There have been but few changes in the plan of work dur-

ing the period, though several new workers have been added.

The force at present is larger than ever before
Working Force and must, of necessity, keep on increasing.
Increased

There are calls from various districts for more aid, and the Division is continually being asked to help out in valuable constructive work, which cannot be pushed, due to lack of workers and funds.

Extension work seems to need no defense, for from every side people who have been benefitted are willing to take up a vigorous campaign in its behalf. This is especially true in the county agent work. New counties are asking Work Popular for aid, and in most cases it is a result of seeing the successful work of agents in adjoining counties.

During the last two years members of the staff of the Utah Extension Division have, upon government or state invitation, lectured in the following states:

Colorado,	Idaho,
Wyoming,	Montana,
Washington,	New Mexico,
Arizona,	Nevada,.
California,	Indiana,
Kentucky.	

This gives an idea of the standing of the Utah work among other states.

The Extension Division as organized in 1912, had seven departments as follows: (1) Farm and Home Demonstration; (2) Farmers' Institutes and Schools; (3) Boys' and Girls' Club Work; (4) Women's Associations; (5) Organization Correspondence Studies; (6) Trains, Fairs and Exhibits; (7) Publications. These have been changed to meet the advancement made. As now organized, the Division has the following departments: (1) Farm Demonstrations (County Agent Work); (2) Home Management and Demonstrations; (3) Farmers' Institutes and Schools; (4) Junior Vocational Work (Boys' and Girls' Clubs); (5) Farm Management Demonstrations; (6) Correspondence Studies; (7) Community Service Bureau; (8) Trains, Fairs and Exhibits; (9) Publications.

A report of each department follows:

REPORT OF COUNTY AGENT WORK.

To the Director of the Extension Division:

Sir: I have the honor to submit herewith, a report of County Agent work in Utah for the past biennium.

At the beginning of this period there were seven county agents at work, covering nine counties of the State. One county was taken on in June, 1915, and one in June, 1916, making nine agents now at work in eleven counties. One new county has recently been organized and is ready to begin work. The agents are all joint employees of the College and the United States Department of Agriculture.

The county agent work is under the immediate supervision of a State Leader, who is a joint employee of the Extension Division of the Agricultural College and of the U. S. Department of Agriculture.

As special aids to the county agents there is a corps of specialists in various lines to advise and render service on technical phases of their work. They also assist in outlining the particular projects with which they are concerned.

Every agent has free use of the mails for all official correspondence and has available, free of charge, all publications of the U. S. Department of Agriculture which are otherwise sold for cash.

In each county a few of the most important lines of work are decided on as special projects upon which special emphasis is laid, and which are written out in advance in detail and then executed with consistency.

In seven of the counties the agents have working organizations of farmers supporting them in all their work. They assist the agents in the choice of projects, in outlining the work, and in its effective execution.

These organizations, where properly officered and directed, are becoming a most potent factor in the development of the county's agriculture and in the support of the county agent.

In fact, the county agent's efficiency is largely determined by the working efficiency of the county organization back of him. It appears to be the only method by which the agent is able to reach the masses of the farmers, and by which they are able

County Farm
Bureaus

to reap the benefits of the agent's service and that of the institutions back of him.

The fundamental purpose of the organization is to federate all agricultural forces into one big, forceful body, in an effort to develop all the agricultural resources of the country and to better the general living conditions of the county. The membership in these organizations now numbers in the neighborhood of 2,000 men.

One of the greatest marks of progress during the past two years has been the finding of ourselves in our work. The proper working relationship between the county agent and all other forces associated with his work has been fairly well established. This has resulted in greater harmony than ever before. The two institutions supporting the agent are directing all work in the county through him and his organizations. The work itself has been definitely defined and placed on a program and project basis. With the help of the County Farm Bureau, a definite program of work is decided on. In addition to the general program, they decide on four or five lines of work needing greatest attention.

A progressive farmer is chosen from the Farm Bureau as chairman of the committee to look after a particular project. He is a successful farmer in this line of work. He and the county agent then draw up a project outline, stating in detail the method to be used in conducting the work in the county. This is then forwarded to the State Leader, who refers it to the specialist of the Extension Division concerned, who offers criticisms and suggestions. When completed it is returned and signed by the Farm Bureau president and by the Chairman of the project committee on behalf of the Bureau, and then by the county agent and the specialist. The project is then approved by the State Leader, and the agent and Bureau proceed to execute the plans.

Each project is handled in the same way, as is also the general program of work. The farmers take kindly to this system and work untiringly to get the work accomplished. It has caused a real awakening in the various counties.

These farmers now feel that their agricultural institutions

are recognizing them in a real vital way, and are pleased to line up and work hand in hand with them as an organized educational body. All work together, and everybody feels that this is not a county agent's work alone, but the work of the whole county, of the State, and of the Nation. Suspicion is allayed and confidence created. Unity, team-work, and efficiency are becoming the by-words. There is no duplication of work where the system is adhered to strictly, thus eliminating undirected and promiscuous efforts.

Each agent makes a monthly report to the State Leader, consisting of tabulated data showing the nature and amount of work done each day during the month. This is supplemented by a written report covering the month's work on each project and on the general program of work. These reports are worked over, summarized and written up by the State Leader, showing the general scope of work done by the counties for the entire State. One copy of this report is forwarded to the Extension Director, one copy is sent to the U. S. Department of Agriculture, and one copy filed in the State Leader's office.

The reports of the various agents are edited by the State Leader and the salient points incorporated in a summarized report sent out to each agent to give him the benefit of the other agents' experiences and the data collected on results of work done.

At the close of each year the agent makes an annual report consisting of tabulated data of work accomplished, and a written report covering each project in its completed form, together with a general statement covering the whole program of work. These are sent in to the State Leader, who makes from them a general report covering all county agent work of the State.

To illustrate the effectiveness of the agents working through the County Farm Bureau on a systematic project basis, the following results are given of the oat smut project conducted in one county.

The county board of directors of the Bureau arranged a demonstration schedule covering all the towns in the county. The agent gave a practical demonstration of the best methods of treating oats for smut. The farmers were there in large

numbers, and participated in the demonstration as far as possible. The local people then chose a few farmers to be official Smut demonstrators in treating and growing the oats. Treatment A card was placed in each co-operator's hands with full instructions printed on it and a place for tabulating the data collected. In all there were 107 such co-operators chosen. The agent, or various local committeemen, visited every farm and assisted in making the determinations.

Every farmer finished the work and fifty kept check plots. The net saving to these 107 farmers alone was \$3,991.78 after paying the expense of treating. The majority of the other farmers of the county, about 75%, treated their oats for the first time. The estimated saving to the county, according to these and other figures obtained from threshing machine managers, amount to \$26,926.00 in this one year.

The following table gives a brief summary of the results of this project:

OAT SMUT CONTROL—UTAH COUNTY.

Number of co-operators.....	107
Number keeping check plots.....	50
Number acres in demonstrations.....	657
Per cent smut in check plots.....	23.00%
Per cent smut in treated plots.....	.95%
Bushels per acre treated.....	50
Bushels per acre where untreated.....	38½
Saving in bushels to co-operators.....	7,322
Saving in money to 107 co-operators.....	\$ 3,991.78
Estimated saving to county this year.....	\$ 26,926.00

GENERAL SUMMARY OF WORK.

A long list of very important items of accomplishments have been accumulated by the agents. Tables enumerating a few of the most important of these are herewith attached.

TABLE SHOWING SOME RESULTS OF COUNTY AGENT WORK.

	Total 1914-1916
Farm Visits made.....	15,292
Office calls on official business.....	4,072
Telephone calls on official business.....	3,967
Meetings held	1,044
Attendance	56,035
Articles published on agricultural subjects.....	204
Circular letters sent out.....	6,755
Letters written	8,925
Bulletins distributed	5,876
Field excursions made to study farms.....	89
Total persons in such parties.....	2,588
Demonstration meetings held.....	261
Attendance	5,117
	Total 1914-1915
Farmers conducting demonstrations.....	187
Farmers growing grain under direction of County Agent	1,061
Acres so grown.....	32,907
Increased yield, bushels.....	13,143
Farmers growing potatoes under County Agents' direction	288
Acres grown	579
Increase yield, bushels.....	2,086
	Total 1914-1916
Rotation systems planned by the Agents.....	140
Animals treated for blackleg.....	630
Hogs vaccinated	1,923
Registered livestock secured on advice of Agents:	
Horses	2
Cattle	160
Hogs	123
Sheep	24
	Total 1914-1915
Grade dairy cows purchased.....	80
Grade beef cows purchased.....	11
Farmers influenced to feed more livestock.....	316

COUNTY AGENTS' WORK BY COUNTIES.

July 1, 1915—June 30, 1916.

	Farms Visited	Office Calls	Meetings Held	Attend- ance
Beaver	1,012	176	59	2,111
Uintah-Duchesne	1,345	617	81	2,937
Utah	1,010	159	87	1,038
Sevier	900	82	67	3,149
Carbon-Emery	1,009	153	30	4,116
Millard	1,027	507	88	2,997
Weber	1,122	885	50	1,282
Salt Lake	878	328	52	2,084

Respectfully submitted,

R. J. EVANS,

State County Agent Leader.

REPORT OF SPECIALIST IN IRRIGATION AND DRAINAGE.

To the Director of the Extension Division:

Sir: Complying with your request of October 20, I am pleased to submit a report covering the work of the Extension Division in Irrigation and Drainage during the period July 1, 1914, to June 30, 1916. This report includes, of necessity, the essential features of the Irrigation Investigations conducted co-operatively by the Utah Agricultural College and the United States Department of Agriculture. In one particular phase of the work, i. e. the development and use in irrigation of underground water, the co-operation has included the Utah Conservation Commission and the State Board of Land Commissioners. In July, 1914, the specialist in Irrigation and Drainage assumed, in addition, direct supervision of the co-operative irrigation investigations in Utah, and in March, 1916, this supervision was made to include the drainage of irrigated lands.

The work has been handled in two main divisions:

1. Direct aid to farmers by means of personal visits and the giving of special talks at special meetings and gatherings.

2. Conducting of special investigations and demonstrations.

The latter division has been divided into four main projects:

- a. A study of the duty and use of water on the farm.
- b. The development of underground water for irrigation, including cost of pumping and best use of water in supplementing shortage in rainfall.
- c. The revision of canal systems for the purpose of making a better and more economical use of water. This includes the installation of measuring devices and suitable diversion works.
- d. The drainage of wet and alkaline soils, and, in some cases, the use of water developed in irrigation of arid lands.

Part of the work covered by the first division will be included in the report of the farmers' institutes, schools, and round-ups. In addition there were 18 special meetings held for the purpose of discussing various problems of irrigation and drainage, at which there was an attendance of 1,332 farmers.

The second division of the work is discussed under the four separate heads:

A. *A Study of the Duty and Use of Water on the Farm.*

A practical study has been made of the scientific principles of irrigation. In each case a specially trained assistant has been placed on a regular farm to investigate the careful use of water and its effect on crop production when applied in various quantities and at various times. These investigations were made as follows:

- At Richfield, Sevier County, in 1914.
- At Cedar City, Iron County, in 1914.
- At Joseph, Sevier County, in 1915.
- At Cedar City, Iron County, in 1915.
- At Nada, Beaver County, in 1915.
- At Malone, Millard County, in 1915.
- At Richfield, Sevier County, in 1916.
- At Cedar City, Iron County, in 1916.
- At Malone, Millard County, in 1916.

In the spring of 1916 a twenty-acre tract was leased at Richfield for three years, in order that the comparative re-

sults covering this period may be obtained. The work at Cedar City was conducted in co-operation with the Branch Agricultural College on the two College farms.

B. *The Development of Underground Water—Its use in Irrigation and Cost of Pumping.*

In this connection investigations have been made as follows:

1. Well dug and pump installed at Nada in 1914 and operated under personal supervision during 1914 and 1915, the water being used in crop production.
2. Well dug and pumping plant installed at Malone in 1914 and operated under personal supervision during 1914-1915-1916.
3. State Land Board well at Cedar City cleaned out to depth of 600 feet—casing perforated; jut for pump dug and lined with concrete and pump outfit installed in 1915 and operated under personal supervision, during 1915-1916.
4. Pumping plant installed in two dug wells in Beaver in 1916 and tests made on cost of pumping and on water supply.
5. Experimental well driven at Fillmore in 1915 leading to development of seventeen large artesian wells during 1915-1916.
6. Surface well dug and pump installed at Plain City in 1915-1916. Incomplete. A second well dug in 1915, pump outfit installed and water used in irrigation of farm.
7. Pump outfit re-arranged for more efficiency at American Fork.
8. Advice given in digging of three additional wells and installation of three pump outfits in Iron County.
9. Study of underground formation in Cedar Valley, Utah County, as regards water supply; made in 1916, and location made for experimental well and work of drilling begun.

In this work of underground water development and its use, the extension specialist has enlisted the co-operation and financial support of the State Conservation Commission, the State Land Board, and various companies, corporations and individuals who were benefited thereby.

C. *The Revision of Canal Systems.*

In this branch of work considerable progress has been made regardless of the fact that much persistent effort and skillful diplomacy is necessary in order to bring about a change in the old established system which will effect the desired results. During the period covered by this report, the following work has been accomplished:

1. At Beaver. Temporary organization effected for combining the ten separate companies of the community into one. Committee apointed and preliminary surveys made. Work suspended as a result of court proceedings being instigated, making further work for the present impossible.
2. At Paradise. Revision of south fields section of canal begun in 1914, completed in 1916. The work includes construction of two miles of branch canal and lateral and installation of four concrete and steel weirs, dividers, and control gates where water is measured and automatically divided equitably among the users.
3. At Manderfield. Three miles of new canal constructed, and temporary control devices installed. This revision saves a loss of at least fifty per cent of water during mid-season and when complete will have system of concrete and steel control and measuring devices.
4. At Perry. Preliminary work in June, 1916, for complete revision and organization of two canal systems where users are not even organized into an operating company.
5. At Enterprise. Work begun in 1915 and continued in 1916 on complete revision of system which includes:
 - a. Division of two large streams of flood water and storage reservoir already built.
 - b. Construction of a submerged dam across a gravel wash at intake of two large canals, the dam to extend beneath the surface to solid material to cut off loss of water through gravel.
 - c. Enlargement of canals to provide means of utilizing flood waters formerly wasted in the spring.

- d. Installation of measuring devices throughout the entire distributing system.
 - e. Raising of dam of storage reservoir to take care of additional flood water.
6. Preliminary inspections and surveys were made for revision of canals at Oak City, Hinckley and Deseret, Summit, Fillmore, Santaquin, Benjamin, American Fork and Lehi, Huntington, Castledale, Emery and Vernal.

D. *The Drainage of Wet and Alkaline Lands.*

Much interest has been aroused among the farmers regarding the drainage problem and considerable work has been opened up:

1. At Hinckley. A drainage district has been organized and the main work done preparatory to beginning the actual construction.
2. At Richfield. The district proposed in the spring of 1915 was organized in the same year and the bonds sold early in 1916. Preliminary surveys were also made and all work finished ready to start actual construction.
3. At Hooper. Preliminary survey was made in 1915 and 1916 as a result of a series of meetings and inspection trips made early in 1915. Steps for organization of a district were well under way at close of the year.
4. At Plain City. Same progress made as at Hooper.
5. Preliminary steps taken for establishment of drainage districts at Benjamin and vicinity in Utah County, at Erda and Grantsville in Tooele County, and along the San Pitch River in San Pete County.
6. A drainage system near Oasis, including 152 miles of tile lines in process of construction.
7. District organized and system in process of construction at Draper.
8. Small systems surveyed and partially or completely installed on private farms at Mount Pleasant, Redmond, Sigurd, Mapleton, Harrisville, and Salt Lake Valley.

9. Drains installed and water recovered for use in irrigation as follows:
 - a. Little Cottonwood Canyon, Salt Lake Valley. Tile line installed and long sump dug from which water is pumped to level, 35 feet above and there used in irrigation.
 - b. Three open and ultimately to be closed drain systems installed at Beaver in marshy pasture lands, completely reclaiming these areas, and the water recovered and carried by gravity to virgin sage brush lands below and used for irrigation of these new farms.

In conclusion, the type of development and reclamation outlined in this report are very essential in the one big aim of the department,—that of increasing Utah's irrigated area to at least three times the capacity at the beginning of the work. The progress has been very gratifying considering the small fund available and the very limited amount of paid assistance. However, as a business proposition, the State can well afford to increase the efficiency of this department since it means many times the returns to the State in dollars for every cent spent.

The immediate needs are:

1. Additional funds for making investigations and demonstrations in underground water development. A special appropriation of from five to ten thousand dollars should be secured for this purpose, the same to be continued through a number of years.
2. An able assistant should be secured who may be used on special pieces of work in the field, requiring the constant attention during process of construction of new canal revisions, the installation of diversion and measuring devices, etc., and who can be used during the closed season in the office in drawing up plans for the department and other divisions of the service.

Respectfully submitted,

L. M. WINSOR,

Specialist in Irrigation and Drainage.

REPORT OF SPECIALIST IN DAIRYING.

To the Director of the Extension Division:

Sir: Dairy conditions in Utah are improving. There has been no radical change, but a steady, healthy, normal development. Cattle are being better bred, and a better class of bulls is being used. The dairymen of Utah are using pure bred bulls almost exclusively. Improved Better methods of feeding are being followed. Conditions Culling of the herds has received more attention as record keeping has become more general. More silos have been built the last two years than ever before. The barns and shelters generally throughout the State are being improved.

Private herd records are receiving special attention, and the work has met with splendid co-operation with many of the County Agents. Through their work alone over 300 cows have been tested. Special mention should also be made of the very good work that is being done by some of our high schools where cow testing and herd records have been kept. There are about 900 to 1,000 cows under test in the State at the present time, out of a total of about 90,000. This means that only about one cow out of one hundred is being properly checked up by the owners. A number of pure bred herds in the State have had cows under official test, to enter the A. R. O. Over 60 individual cows in the State have already entered the Registry of Merit Class, and others will enter as soon as their tests are completed. We wish to especially record the hearty co-operation of Governor William Spry. A number of our State institutions have dairy herds, and due to his influence and desires, the dairy cattle of these various institutions have been put under official test. He also desires that as soon as possible no bull calf at any of the State institutions should be preserved for breeding that does not have a Register of Merit, or an Advanced Register Cow for a dam.

Throughout the State, feeding is receiving more and more attention. About 185 silos have been built. As yet

we have not heard of a single adverse report on the feeding of silage. We think that the building of silos will very materially assist the farmer in solving the question of the high price of hay.

Much improvement is shown throughout the State in the building of barns. Many inquiries have been received in regard to remodelling of barns, all of which have been answered by personal visits, where possible, or by correspondence. A large number of blue print plans showing details for building have been sent out.

A great deal of attention has been given to the creameries and cheese factories of the State, trying to raise the standard of products, and we think a gradual improvement is being made.

Seventeen high schools of the State have been visited during the past two years, and the students addressed on the importance and value of the Dairy industry.

Forty-three articles for the press have been printed by our State Agricultural papers. Also two circulars published by the Extension Division of the Agricultural College.

Assistance has also been given the Extension Division of the Agricultural College in its institutes and schools in various parts of the State. Many visits have been made also to those counties which have County Agents to assist them in their work. Nine days were spent on the Demonstration train sent out by the Agricultural College and the Salt Lake Route, and addresses made at ten meetings. Many County Fairs throughout the State have been visited by me, as judge of the live-stock.

By invitation of U. S. Department of Agriculture and the State officials in charge of Extension work, I have visited the states of Colorado, Wyoming, Arizona, and New Mexico, and addressed the farmers and housewives at their annual conventions in these states. In addition to the above, addresses have been made at 188 meetings in the State, with a total attendance of 18,395.

Summary.

Meetings addressed	188
Attendance	18,395
High Schools visited.....	17
Plans furnished for barns.....	13
Silos built	185
Cattle purchased	32
Articles published	43

Respectfully submitted,

BEN R. ELDREDGE,
State Specialist in Dairying.

REPORT OF EXTENSION SPECIALIST IN DRY-FARMING.

To the Director of the Extension Division:

Sir: I was engaged in this service July 1, 1914. The first effort was to make a preliminary study of conditions and to determine the needs of the various dry-farm sections of the State; meeting with the leading men in the communities, and getting in touch with the forces through which I could operate and introduce the mission and work of the office. Numerous meetings were held with the farmers in sixteen counties discussing the possibilities of dry-farming in each locality, with a view of attracting attention and instructing those engaged in this pursuit.

Particular attention was paid and somewhat extended investigation was made during the first year on a number of the new and larger dry-farm areas, with a view of determining the local prevailing conditions, such as climate, soil, seasonal precipitation, etc., and of ascertaining, in a preliminary way, the possibilities of each section. Reports in detail of my findings have been submitted from time to time to the Extension Director and at the end of the first year's work an epitome of these reports was contained in my report of December 17, 1915.

During the year ending June 30, 1915, addresses on Dry-Farming were made in 31 sessions of Farmers' Institutes and Schools and 43 meetings with Farmers, aggregating an attendance of 5,527. Sixteen demonstrations

Demonstrations were instituted in co-operation with County Agents and 22 other demonstrations in nine different counties. These were undertaken to demonstrate early vs. late plowing; deep vs. shallow plowing; early spring harrowing; control of weeds; preparation of seed bed; seed selection; planting; treatment against smut; growing of various crops, etc. These demonstrations have been continued and some of them will be completed in 1916.

Many other promising districts have since been visited and conditions investigated. Special meetings have been held with the farmers and advice given on the management of the soil and the methods to pursue for the production of crops. Some detailed reports of conditions in these districts have been submitted to the Director and others will soon follow.

Six new demonstrations have been inaugurated during 1916 and sixteen of the old ones will be completed during 1916.

The work of the office since January, 1916, has been conducted under six general projects.

Persons entering into the pursuit of dry-farming are invited to apply to the Specialist for assistance, when counsel and direction are given as to equipment necessary and the methods to follow to break up the lands and get them into proper shape for the first planting; the planning of the farmstead; the selection of seed; the procuring of water for culinary purposes, etc.

Aid to New Farmers As visits are made over the State an inquiry is made of such lands and a listing is made of them for the information of those who may inquire.

Inventory of Available Dry-Farm Lands This office acts as a sort of a bureau for the distribution of better dry-farm seeds. Farmers are urged to list with us seeds of merit, and those needing such seeds are advised of their whereabouts with the prices asked. The Specialist is constantly active in this project in assisting in the distribution of good seeds—seeds of particular merit.

Seed Exchange This comprises a careful study of prevailing conditions on the individual farms and in districts, and the methods

pursued by farmers, with special reference to successes and failures, making notes of same and carrying such findings from farmer to farmer, and from locality to locality, as a special means of giving information on the management that makes for success. This includes also, all instructions and assistance given to the farmers on the growing of various crops.

Dry-Farm Management This includes an investigation of all farm implements with a view to their economic efficiency in actual use on the farms. The purpose is to be able to advise against useless expenditures in farm implements, and to determine upon the proper kind to advise in different localities and under different conditions.

Study of Dry-Farm Equipment This involves the introduction of forage crops and fattening feeds on the dry-farms and the pursuit of such methods that will make it possible to install live-stock on the farms, so as to make an economic use of all waste material, as well as to conserve fertility and to provide for a greater income; also to provide for a more constant employment of the farmer's time and that of his help. The project is having careful study and is being encouraged.

All of these projects are being prosecuted with vigor and splendid progress can be reported.

In addition to a lively prosecution of the above enumerated projects, since June 30, 1915, I have addressed 48 sessions of Farmers' Institutes, Schools, and meetings with the farmers, with a total attendance of 3,794. I have visited 179 farms and made 34 visits upon farms of co-operators, have traveled 13,248 miles, and have given specific instructions on farm management, equipment, control of weeds, preparation of seed bed, variety of crops, types of soil, live-stock, marketing, etc. Such efforts have invariably been received with kindness and many suggestions have been put into practice.

Many articles setting forth our work and expounding dry-farm principles have been written and published in the Utah Farmer, the Live Stock Journal, and other periodicals, thereby getting our messages before many farmers who did not attend the institutes.

While more than 20 minor field demonstrations have been conducted to prove various methods employed to obtain certain results, the following partial list of some of the major, or more important field demonstrations, will serve to show the character of the demonstrational work and the results sought to be obtained, as well as the name of the co-operators and the acreages employed.

PARTIAL LIST OF DRY-FARM DEMONSTRATIONS CONDUCTED BY
J. W. PAXMAN, SPECIALIST IN DRY FARMING.

Name.	Location.	Acreage.	Character of Demonstration.
Hans Hassell	Mammoth	10	To prove the value of compacting the seed bed. Completed in 1915 and gave 10 bu. wheat additional yield.
A. L. Cook	Tremonton	640	The economic conducting of a Dry-Farm for production of crops.
F. D. Welling	Garland	2	Production for Tepary Beans.
Knight's Farm	Tintic	130	Methods for the production of maximum crops.
Glynn Bennion	Bennmore	320	Economic use of tractor and horses combined as equipment in breaking new lands and producing crops.
S. M. T. Seddon	Vernion	100	The power of shadscale lands to produce wheat, before and after a crop of sweet clover.
M. M. Stookey	St. Johns	60	The method of breaking new lands for maximum crop of wheat.
N. P. Peterson	Granger	80	Right methods for crop of wheat.
H. L. Day	Granger	20	Right methods for crop of wheat.
F. Mullner	Cedar Valley	10	Right methods for crop of wheat.
J. R. Crawford	Big Plains	320	Economic means for developing a Dry-Farm and crops to grow.
Harold Russell	Canaan	320	Economic means for developing a Dry-Farm and crops to grow.
J. S. Dalley	Kanab	320	Same as above.
Hans Jensen	Monticello	320	Same as above.
H. S. Barnes	San Juan	320	Same as above.
H. A. Hulshoff	Winder	10	Growing of Grimm Alfalfa at an altitude of 7,200 feet.

Final results in dry-farm demonstrations are not obtained short of a period of two years, hence no report can be made further than indications point to some splendid results at the close of the year 1916. Other demonstrations are extended over longer periods and these show splendid progress.

The correspondence of this office is becoming an important factor in the dissemination of information on the

vital questions pertaining to dry-farm management, as hundreds of inquiries are answered each month. This is done between visits into the country, and entails a constant activity and the employment of a considerable amount of time.

There is one feature noticeable with the new beginner in his attempt to develop a dry-farm, that gives evidence of a misconception of Nature's requirements. It is responsible for much disappointment and discouragement. Most beginners commence their development work with very poor and inadequate equipment, and with scarcely any means for investment. Under such conditions he gambles with nature, thinking he can obtain a good crop from the practice of crude methods, and at an earlier season than nature provides. He starts in with poor equipment, practices poor methods, is poor himself, and consequently comes out poor and discouraged.

The person undertaking to subjugate the desert—to transform the brush lands into paying farms, should be possessed with a good amount of native gumption, a good supply of energy and determination, showing considerable of the pioneer spirit, and a willingness to make personal sacrifices and prepared to combat with stubborn conditions. He should be supplied with good, efficient, modern equipment, improved implements and teams in good flesh with sufficient weight and power to do the work; and also be supplied with a few hundred dollars, or a means of earning them at such times as the farm can best spare his time. He should be possessed with patience and enough means that he can abide Nature's time for returns, and know that Nature's time in Utah where the rainfall is limited to 12 to 15 inches, is two years; that he must utilize every possible means of conserving moisture for two years for the use of the growing crop.

If every beginner should be thus equipped and qualified, paying crops would reward him, encouragement would be his first fruits, and the elements of permanency would take hold of his farm business and he would receive joy in his occupation. It pays to start right and to continue in the right

course. It is well to remember that "well begun is half done."

It takes quality in the man as well as a fair supply of money to justify the undertaking of developing a dry-farm. In these days, of modern living and convenience it is nothing short of folly for a man to attempt such a tremendous task of reclaiming the desert wastes without modern equip-

ment, and enough motive power and energy to endure the hardships incident to pioneering, and with a few hundred dollars to spare for seed and current expenses for at least the

first year. Persons contemplating taking lands for the purpose of dry-farming, should figure on having not less than \$1,000.00, and it would be better to have \$2,000.00, to start with. It will be difficult to meet the requirements of the law, and develop properly with a less amount. It will be up-hill work and a long and strenuous pull if a less amount is available. Hundreds have met with sorrow and disappointment because of commencing their development work with more limited amounts, and would have been much the gainer had they never attempted the development of the farm. To start in good and strong insures a continued vigor all along the line. If we will give Nature her full time, and assist her a little, she will respond generously, and our farms will be paying institutions.

Respectfully submitted,

J. W. PAXMAN,

State-Wide Specialist in Dry Farming.

REPORT OF HOME DEMONSTRATION WORK.

To the Director of the Extension Division:

Sir: I have the honor to submit a report of the work of Home Demonstration during the past biennium.

While extension work for women must always, of necessity, have some features that are essentially feminine, one of the most encouraging signs of the times for the past two seasons is the steady convergence of hitherto diverging

lines. Women have always shown interest in talks on farm produce, for is it not their living and that of their families? But men are not only interested in, but are beginning to con-

Trend of
Development

sider the farm home as a factor in farm economics, and, therefore, welcome everything which comes in an educational way for the wives, mothers, and daughters of their homes.

The work for both men and women is carried on mainly under the same general heads: Institutes, schools, conventions, publications, women's study organizations, and the Federal work known as Home Demonstrations. A brief report of what has been done under each head follows:

Institutes and Schools	Lectures, demonstrations, and home visits have constituted the work of the Institutes and Schools, the principal topic for 1914-1915 being home planning, decoration, furnishing and equipment. Steps in advance methods have been the carrying of exhibits in the form of actual home equipment, and the replacing, to some extent, of the morning lectures by visits to homes desiring advice on remodelling, planning, and decoration. Experts from the Department of Applied Art at the College gave lectures illustrated with slides and exhibit material. From June, 1915, to June, 1916, the main subject has been developing along the line of child nutrition, including that of family nutrition, and it is this subject that will form an important feature of the winter short course.
---------------------------	--

Housekeepers' Conferences	The Housekeepers' Conferences, held at Logan, Monroe, and Cedar City, were well attended. The principal speakers were Mrs. T. Vernetta Morse, who spoke on Art as applied to every day life; and Mrs. Nellie K. Jones, who demonstrated in lines of cookery. (For statistics see figures for Farmers' Institutes and Schools.)
------------------------------	--

Home Economics Associations	The Home Economics Associations, organized for the special purpose of interesting the women in improved homekeeping methods, participated in a state-wide contest in home planning. One of the good results of this has been the large number of requests for help from those about to plan new homes. In pursuance of the plan to make child nutrition a prominent feature of this season's work, the associations have taken up the study of clean milk for home use. They have been aided in this by
-----------------------------------	---

the DeLaval Separator Company of Chicago, which company is publishing a series of circulars on this and allied subjects for the benefit of the women who are members of the associations. Some good civic work in the cleaning up of farm surroundings has grown out of this study. Federated clubs and various church organizations are also taking up the study of Home Economics in a systematic manner.

The following figures show status of this work:

Number of organizations.....	70
Number enrolled	2,252
Number allied with other organizations....	39
Number doing civic work.....	25
Number publications distributed:	
Monthly Program Leaflet.....	27,024
Fly Circulars	1,000
Child Welfare Leaflet.....	500
Clean Milk Leaflet.....	4,000
Home Decoration Circular.....	2,000
Miscellaneous	100

The opening of the season of 1914 found us without a home demonstrator, the former field worker having resigned. The only work of this nature performed 1914-1915 was a demonstration project of two months' duration undertaken in one county, under the direct auspices of the States Relations Service, Washington, D. C. The end in view was an attempt to ascertain how the women would receive the services of a demonstrator and methods of work. The project undertaken was the preparation and service of food, and home equipment. For details of operation see the Farm and Home Demonstration Monthly for the month of July.

In June, 1915, the Department of Home Management Demonstrations was created with a woman in charge and one field worker in two counties. Projects in home management household account keeping and infant nutrition were undertaken, and seasonal projects in the canning of meat and vegetables were instituted. Civic work has been carried on in several towns and ten home economics associations, as a means for carrying on the work, were organ-

ized. Under the infant nutrition project, clinics for babies have been conducted by local doctors, and campaigns for the production of sanitary milk started. One of the most valuable features was a baby contest. The contest was judged by a local physician.

In September, 1915, another field worker was added, operating in one county and one district of another county. The main work in this field has been infant nutrition, in which the help of a pediatrician has been solicited. Clinics, food lectures, and demonstrations have been the principal means by which the work has been carried on. A project in home records to include expenditures for living has been put in, the results of which will be better known when the records are checked.

The field work in Home Demonstration is checked by means of report cards, itineraries, and detailed reports by project.

In addition to these main projects, numerous calls for advice and assistance in household activities are answered. The women of the counties wherein the work is done are showing great appreciation of the same. The following is the statistical report:

June, 1915, to June, 1916.

Women in the field.....	2
Counties operated	3 (and 1 district)
Towns visited	58
Homes visited	481
Bulletins distributed	672
Demonstrations given	52
Meetings held	85
Attendance at meetings	1,299
Co-operators in projects.....	178
Towns conducting sanitary milk campaigns	5
Babies examined in clinics.....	112
Days at desk work, preparing ma- terial	80

Respectfully submitted,
 GERTRUDE M. MCCHEYNE,
 State Leader in Home Demonstration Work.

REPORT OF JUNIOR VOCATIONAL WORK.

To the Director of the Extension Division:

Sir: I have the honor to submit herewith a report of the Junior Vocational Work.

The duty of the Junior Vocational Department is to interest the boys and girls of the State in agriculture and home economics, and so help in the making of a higher type of farmers and housewives for the future. Ordinarily,

Duty boys and girls do not like the so-called common duties of life, because they feel that nothing can be learned by the performance of

them. When these tasks are thoroughly understood, however, it is found that there are more wonderful, beautiful, elevating and inspiring things to be learned in the doing of these tasks than there is in the performance of a great many of the so-called great things in the world. There are more interesting and wonderful facts that can be learned from a little handful of soil than can be learned from a study of the sun, moon, and stars. When these facts are understood, it adds dignity, honor, and satisfaction to every-day work.

The best way to teach these things, and at the same time increase the remuneration secured from this work, is to have the boys and girls do the practical work themselves

Club Work according to definite instruction and supervision. Boys' and girls' club work is based on practical, economic principles, so that it may

have actual application on the farm and in the home.

The work is carried on in co-operation with the United States Department of Agriculture, and the school authorities of the various school districts. Two districts have a person employed the year round to look after the club work in their districts. Six school districts each have a person employed part of the year to look after the work, and two school districts each have two persons, a man and a woman, employed on part time to follow up the work. In the above mentioned districts the club work is part of the regular required work of the school, either as laboratory work or as an independent course for which credit is given toward graduation.

Each line of work is definitely outlined in project form, so that pupil, teacher, supervisor, county superintendent and State Leader knows what each has to do to fulfill the articles of agreement. Each project is progressive, so that pupils may continue in the same line of work for at least four years, thus completing a systematic course. This also enables the workers to show the development and improvement they are making, both as to methods and results.

Projects
Outlined

During the years 1915 and 1916, 573 clubs were organized and 17,903 boys and girls actually did some work under supervision. These boys and girls have been the means of greatly improving agricultural and home economics conditions in their localities, and of causing a better feeling not only among the young people, but also among the parents, towards agriculture and home economics. The boys and girls were enabled by their club work to increase the wealth of the State during the two years \$150,176.17, or an average of \$8.38 each.

Clubs

During the year 1915, 310 boys reported to me as having completed their potato club work. The average yield of these was 440 bushels per acre. The average yield per acre for the State is 120 bushels. One boy grew 720 bushels on an acre and sold them in the spring for \$1.00 per bushel.

The projects as outlined are as follows: $\frac{1}{2}$ acre of potatoes, sugar beets or mangel wurzels; $\frac{1}{8}$ acre of garden; poultry, either hatching and raising, or egg laying and marketing; raising pigs and feed for same; farm handicraft (in which 20 useful things are made to use on the farm or in the home); baking, 25 times; sewing, 14 lessons; flower garden, 10 square feet; canning of fruits and vegetables for the home.

For the high school boys and girls, Better Seed and Cow Feeding and Testing were outlined for the boys, and Home Handicraft and Menu and Table Service for the girls.

During the two years the Junior Vocation faculty held 676 meetings and 103 demonstrations, with an attendance of 57,741 boys and girls, men and women. The faculty at present consists of:

J. C. Hogenson, State Leader and Head of Department.

Claire Parrish Dorius, Assistant State Leader.

E. W. Stephens, Assistant State Leader.

During the coming year we expect much closer co-operation between the school districts of the State and the Agricultural College, because of the Articles of Agreement which have now been signed up with nine school districts. This agreement gives each district fifty (\$50.00) dollars

Plans for from the Smith-Lever Fund to help pay the
the Future expenses of the District leader. We have
also been able to secure the franking privilege
for these district leaders for their official mail.

In these districts the Junior Vocational work is part of the required work of the schools. Our object is to extend this work to every school in the State and to broaden our work so that it will include not only agriculture and home economics, but all Vocational work.

The following report of the Girls' High School Clubs in the State is submitted:

GIRLS' HIGH SCHOOL CLUBS.

To the Director of the Extension Division:

Sir: Since our club season has not yet closed, I am unable at this time to give a complete report, but the following will give some idea of the kind of work that we have been doing with the girls during the past club season.

Total enrollment, 927. These are the girls who have actually done some club work. All the others who enrolled have been doing with the girls during the past club season.

	Sewing	573
	Baking	215
	Flower Gardening	75
Projects	Canning	12
	Poultry	7
	Vegetable Gardening	8
	Table Service	36
	Remodelling the Kitchen.....	9
Completed work last year:		
	Table Service	36
Remodelling Kitchen		7

High school credit was given for the last two projects. I am not attempting to give you here any of the figures for the other projects during the last year, as Professor Hogen-son has that in his report.

Number exhibiting:

	Sewing	105
State Fair	Canning	10
Report	Baking	41
	Poultry	4
	Flower Gardening	5

The final results from the judges show that 72 won first place in sewing; 35 first place in baking; all won first place in canning; and 2, first place in flower gardening. Most of the others received second place. Very few third or fourth places were given. I might say here that the judges were greatly surprised in the quality of the work done, and all of our judges were trained women in home economics, except one, and she is an experienced woman in needlework who is now teaching in the Davis County High School.

Instead of having two or three girls receive all the honors this year, we made it a point to give every girl who exhibited, some sort of recognition. Our ribbons were printed to read "First," "Second," "Third," and "Fourth" places. First place meant between 90 and 100; second place between 80 and 90; third place between 70 and 80; and fourth place between 60 and 70. Every girl had to make a grade of 60 before she received a ribbon. The judges judged the work on the same basis as the work is judged in school, so that we know the results are standard.

All the work that is being introduced for the girls during the school year will receive school credit, both in the grades and in the high schools. In fact, our plans are already in the hands of the superintendents of Davis, Box Elder and Cache counties, with their consent that the work is to be given the same recognition as any other subject in their curriculum. Some of the high schools have already written in for assistance, so prospects for successful work this year look very bright indeed.

We have received information that 323 girls have already completed their projects for this past summer's work, and we expect to get results of the others in the near future.

Respectfully submitted,

CLAIRE PARRISH DORIUS,
Assistant State Leader, Club Work.

Respectfully submitted,

J. C. HOGENSON,
State Leader, Club Work.

COMMUNITY SERVICE BUREAU.

To the Director of the Extension Division:

Sir: The business of the Community Service Bureau is to give help and advice to Utah towns and villages with regard to community celebrations, club work, and school life. The work will be varied and far reaching, but may be included under the following heads:

- A. Play Service. Advice as to selecting and producing plays will be given to any club, school, or organization that so desires, and certain plays will be loaned free of charge.
- B. Club Service. Outlines for a course of study on any subject, and suggestions as to subjects, will be furnished to any club that desires.
- C. Community Service. Suggestions and outlines will be furnished as to ways for a community to start a library or pioneer museum; of ways of celebrating Christmas and other holidays in common.
- D. Debate Service. Outlines and subjects for debates will be furnished any school or club that desires help along this line.
- E. Library Service. Packages of books suitable for rural communities will be loaned to responsible individuals who apply.

The Bureau has been organized since July 1, 1916, but the first information sent out was in a circular mailed September 15. Since that time about twenty letters have been written in regard to club programs, plays, and vocational

advice. Plays have been loaned in four towns. A circular on play service and Christmas community celebrations has been prepared and mailed.

Respectfully submitted,

FRANK R. ARNOLD,
Professor in Charge.

REPORT OF THE FARM MANAGEMENT WORK.

To the Director of the Extension Division:

In consequence of an agreement between the United States Department of Agriculture and the State Agricultural College, a new branch of the Extension Service of the Institution was promoted, known as "Farm Management Demonstration Work." The Demonstrator in charge was Mr. E. B. Brossard.

The object of the work was to collect data from various representative areas in the State in regard to the business of farming. After a sufficient number of records had been taken, giving a detailed account of the
Object farmers' business for the year, an analysis of
of Work the information was to be made at the College
Extension Office, with the object of demonstrating to the farmers in the area from which the records were taken, those factors which were conducive to a large return for the labor and management of the farm operator. Such information was thought to be beneficial for the following reasons:

First, it would enable the farmer to think of his farm as a business unit, and show him the importance of a good organization and administration of the farm as a means of increasing its net income.

Second, to show the farmer a practical and efficient method of summarizing and analyzing his farm business as a means of measuring the profit or loss incurred in conducting it, and of deciding upon readjustments which promise to increase his net income.

Much care was taken in selecting areas to be used for demonstrational purposes. Consultations regarding this
Areas Chosen matter were entered into with the Director
and Assistant Director, State Leader of
County Agents, and the various County

Agents. It was finally decided that the following areas be selected from which records would be taken on the respective dates:

Area	County	Date	Number of Records Taken
Sandy	Salt Lake	December 30, 1914	73
Hyde Park	Cache	January 28, 1915	52
Hinckley	Millard	February 5, 1915	59
Monroe	Sevier	February 16, 1915	66
Wellington	Carbon	February 10, 1915	26
Beaver	Beaver	February 26, 1915	50
Ferron	Emery	March 10, 1915	40

Total records taken..... 366

The time which it took to take the records varied with the area. Some were completed within a week, while other districts were exceptionally slow in finishing the work, depending largely on the response of the farmers. Valuable assistance was given the Farm Management Demonstrator in collecting the desired information by State Leader Dr. Evans and the various County Agents in their respective counties.

The 1914 records were taken by the Survey Method which is a statement of estimates made by the farmer of his year's business. Careful calculation and tabulation of the accounts in the office of the Demonstrator brought out some well founded conclusions regarding the profitable business of our Utah farmers. Special sheets were prepared for each of the farmers who co-operated in the demonstration showing a complete financial statement of the farm business for the year 1914. A complete analysis of the important factors determining farm profits, such as Size, Quality and Diversity of business was made in comparison with the ten most successful farms of the area.

Letters were written to the farmers, telling them that the records were completed and that by calling at the office of the County Agent they could obtain a complete statement of the farm business. A majority of the farmers were reached in this way: 334 of the 366 records were returned in person, either by the County Agent or the Farm Manage-

Records
Returned

nent Demonstrator. Reorganization plans of the farmer's business were discussed at the time and changes were suggested which would add to the efficiency of the farm practice.

Demonstration Meetings Held During Year 1915.

County	Town	Meetings Held	Attendance
Beaver	Beaver	2	100
Cache	Hyde Park	4	111
Carbon	Wellington	2	125
Emery	Ferron	2	135
Millard	Hinckley	3	190
Salt Lake	Sandy	3	586
Sevier	Richfield	3	186
Sevier	Aurora	1	76
Sevier	Monroe	4	310
Total.....		24	1819

Besides these meetings at which demonstrations were made, the following "follow-up work" is listed:

County	County Agent	Area	Number of Visits	Number of Conferences
Beaver	H. A. Christiansen	Beaver	5	29
Cache	None	Hyde Park	9	10
Carbon	R. H. Stewart	Wellington	5	10
Emery	R. H. Stewart	Ferron	5	15
Millard	J. P. Welch	Hinckley	5	20
Salt Lake	H. J. Webb	Sandy	12	30
Sevier	Lorin A. Merrill	Monroe	25	15
			65	119

During the year a Farmers' Account Book was prepared and placed in the hands of as many farmers and co-operators as possible. A nominal charge of twenty-five cents was made for the book. As a consequence of the account book campaign, over three hundred farmers in various parts of the State were keeping their own records, which aided materially in the taking of the records the following year.

Summary of Year's Work, (1915).

	No. Records			No. Planning	
	No. Records Taken	Returned in Person	No. Meet- ings Held	Att.	Changes
Beaver	50	50	2	100	45
Cache	52	45	4	111	33
Carbon	26	20	2	125	55
Emery	40	40	2	135	..
Millard	59	59	3	190	59
Salt Lake	73	73	3	586	73
Sevier	66	41	8	572	37
	<hr/> 366	<hr/> 328	<hr/> 24	<hr/> 1819	<hr/> 302

County	No. Planning to Keep Record	Number Visited	Number other Conferences
Beaver	49	5	29
Cache	28	9	10
Carbon-Emery	60	10	25
Millard	59	5	20
Salt Lake	73	12	30
Sevier	39	25	15
	<hr/> 308	<hr/> 66	<hr/> 119

Report of the Year 1916 up to July 1.

The general method of conducting the work was in most respects very similar to that followed during the year 1915. Records were taken in the various areas beginning with the following dates:

County	Area	Date	Number of Records Taken
Salt Lake	Sandy	January 2, 1915	48
Millard	Hinckley	February 14, 1915	62
Emery	Ferron	February 16, 1915	48
Sevier	Monroe	February 29, 1915	38
Beaver	Beaver	March 13, 1915	40
Cache	Hyde Park	March 22, 1915	49
			<hr/> 285

It was thought best to discontinue record taking in the Wellington Area on account of so many difficulties arising. A project agreement has been entered into, by which one additional area will be surveyed this year, that of Pleasant Grove, Utah County.

At a meeting of the County Agents and Extension Specialists held at Logan, June 7, it was agreed that farm records for 1916 be taken on the following dates:

December 4-9 inc., Sevier and Emery Counties.

December 11-16 inc., Salt Lake and Utah Counties.

January 8-13 inc., 1917, Millard and Beaver Counties.

Summary.

County	Area	Number Records Taken	Number Meetings Held	Att.	Number of Farmers Pl.changes	No. Visited	Number Agreeing to Keep Record
Sevier	Monroe	38	3	271			10
Cache	Hyde Park	49	3	350			25
Peaver	Beaver	40	3	48		15	
Emery	Ferron	48	1	96	22	22	54
Millard	Hinckley	62	1	62		92	62
Salt Lake	Sandy	48	1	100			20
		<hr/> 285	<hr/> 12	<hr/> 927	<hr/> 22	<hr/> 129	<hr/> 175

A general circular has been prepared by the Farm Management Demonstrator, Mr. Brossard, and published by the Extension Division as Circular Number 15, Vol. 4. This circular outlines the purpose of Farm Management Demonstrations, the methods used in making Publications the demonstration, and some results obtained from the work. The plan of returning the 1915 records to the individual farm co-operators is to be by means of a printed circular. In this circular will be demonstrated some of the factors that influence farm profits in the respective counties.

The importance of Farm Management is emphasized by every state in the Union in one capacity or another; a vast majority of the states having a demonstrator devoting full time to the work. The information that has already been collected in this State will furnish valuable data for investigational purposes. Although the work is comparatively new, yet it is having a tremendous influence by causing the farmers of the State to realize more fully the import-

ance of keeping farm records, and analyzing their business with the object of receiving the largest net return per unit of capital and labor invested.

An area of over 50,000 acres in the State is carefully studied with reference to labor incomes of the farm operators. Numerous inquiries are sent in annually from practically every county, asking that we co-operate with farmers in the study of their business. No other work, demonstrational, investigational, or instructional, is of more importance in the curriculum of an Agricultural College. In reference to the Extension Service of this College, Farm Management Demonstration Work will ever be of fundamental importance, and funds appropriated for this cause will be a means of adding materially to the State's wealth. It is very likely not so important to know how to produce, as it is to know what to produce. The ultimate aim is the largest net returns to the farmer for his capital and labor invested in the farm enterprise.

Respectfully submitted,

MARK H. GREENE,

Farm Management Demonstrator.

FARMERS' INSTITUTES AND SCHOOLS.

The work in institutes and schools has been pushed vigorously during the last two years, and the results are gratifying. The rural population is more than ever interested in modern methods, and with the introduction into institute work of more practical demonstrations, the interest seems to increase.

The method of attack of the one-day institute is being changed somewhat and wherever these
Institutes sessions are held, part of the day is given to farm and home visits. In this way some demonstration work is introduced.

The one and two-day institute is being superseded, where possible, by the three to six-day schools, where more real instruction of a constructive nature can be carried out.

The business side of farming has been made
Schools one of the leading topics of discussion during the last two years, and the aid given by the farm management work is of great importance.

The farmers' conventions, called "Round-Ups" and the Housekeepers' Conferences are meeting with continued success and are powerful forces for the advancement of Utah farm life. Each year these conventions become more specialized. At Logan last year, practical courses were organized and proved a great success. Four to six periods of two hours each were spent in some regular practical class work.

The following outline of one of the most popular courses will give an idea of the nature of the instruction given:

Veterinary Practice.

First day—

Disinfectants and their use.

Second day—

Treating wounds.

Third day—

Liniments, blisters, etc.

Fourth day—

Post mortem examinations.

Fifth day—

Unsoundness.

Sixth day—

Horseshoeing,

The horse's foot,

The horse's shoe,

Nailing on the shoe.

During the tour of the Salt Lake Route Demonstration Train, successful meetings were held at the principal towns along the line. This type of institute work can still be carried forward in certain sections, and will produce results worth while.

Summary.

Institutes:	1914-15	1915-16	Total.
Counties visited	22	28	50
Towns visited	134	164	298
Number of sessions.....	292	213	505
Attendance	30,034	13,850	48,884
Schools:			
Number of Schools	4	14	18
Number of sessions.....	65	209	274

Attendance—			
Men	10,185	16,073	30,661
Women .....	...	4,403	
Farmers' Conventions and House-keepers' Conferences:			
Logan—Number of sessions.....	26	33	59
Attendance—			
Men	8,885	3,925	12,810
Women	4,660	3,518	8,178
			<hr/>
			20,988
Richfield, Monroe—Number of sessions			
	25	49	74
Attendance—			
Men	1,680	3,722	5,402
Women	1,626	2,927	4,553
Conjoint	1,750	2,015	3,765
			<hr/>
			13,720
Cedar City—Number of sessions...	24	45	69
Attendance—			
Men	4,265	2,630	6,895
Women	3,060	3,062	5,122
Conjoint	2,705	2,825	5,530
			<hr/>
			18,547

1915-16

Trains:

Number of cars.....	13
Miles traveled	960
Number of towns visited....	16
Number of meetings.....	52
Attendance at meetings.....	5,943
Through Train	16,650

Total.....22,593

Grand Total.....156,390

All members of the Extension staff, and a large number from the faculty of interior instruction, have rendered valuable service in the work. An increasing use is being made of the practical men and women who have made

acknowledged success of some phase of rural work. These people are a great help to the work, and give freely of their time.

TRAINS, FAIRS, AND EXHIBITS.

During the season just closed, the most comprehensive demonstration train ever attempted in Utah was run over the Salt Lake Route. This train was a co-operative effort of the Salt Lake Route, Utah Agricultural College, Demonstration the University of Nevada, and the United States Train Department of Agriculture. The special consisted of thirteen cars, and traveled nearly 1,000 miles. The College exhibit consisted of a car of livestock and barn equipment. Five head of cattle and three hogs were included. Beside the livestock, an exhibit of poultry appliances, model dairy barn, barn plans, charts, etc., were carried.

A car was given over to exhibits of methods of irrigation and dry-farming. This car contained a pumping plant supplying water to a model irrigation system; an exhibit of soils of different types, showing their adaptability to dry-farming; an array of varieties of forage and grains useful to Utah agriculture.

In the Home Economics car was the following: House plans and equipment; sanitary devices and suggestions for the home; useful hints on home decoration; children's clothing, etc. This car was especially attractive and received much praise.

The government wool car was a big attraction, for it contained a comprehensive exhibit of sheep and wool.

The rest of the car consisted of corporation exhibits as follows:

Consolidated Wagon and Machine Company.....	3 cars
Fairbanks, Morse Company.....	1 car
Utah-Idaho Sugar Company.....	1 car

For the use of the party of speakers and attendance, the following cars were attached :

- 1 Diner.
- 1 Sleeper.
- 1 Business car.

SUMMARY.

April, 1916	Cars	13	
	Number of speakers.....	15	
	Miles traveled	960	
	Towns visited	16	
	Meetings held	52	
	Attendance at meetings.....		5,943
	Through Train		16,650
Total			22,593

The companies exhibiting did much, by their hearty co-operation, toward the success of the trip. The Consolidated Wagon & Machine Company needs, however, special mention because they secured the services of Dr. Taylor of Moline, Illinois, who rendered a most valuable piece of service to Utah agriculture.

The spirit shown by the Salt Lake Route in making this trip possible is a commendable one, and proves that they are working for the welfare of the section along their lines.

Encouragement has been given to county and state fairs.

In most of the fairs held in Utah, active part has been taken by members of the Extension Division. Judges are sent wherever wanted, and during the last two years, most of the judges at county fairs have been supplied by this division.

Fairs and Exhibits	Number of fairs managed by Extension workers.....	8
	Number of fairs judged.....	15
	Judges of livestock furnished.....	11
	Judges of agricultural products.....	9
	Judges of home economics.....	8
	Judges of Poultry.....	2

Large exhibits of boys' and girls' club work are made at small district fairs, and from these an exhibit is made up for the State Fair, where the work is handled under the supervision of the club workers from the Extension Division.

At the last State Fair the Extension Division presented its work to the people of the State. A large relief map, made by the Geology Department, was fitted up to show the extent of the

work done. This exhibit received considerable favorable comment by press and public.

The Extension Division intends to lend encouragement to this type of work until every county in Utah will boast a successful county fair.

PUBLICATIONS.

As fast as funds will permit, publications of value to the rural communities are being prepared and published. The circulars sent out so far, have been well worth while, and requests for them are received by every mail. An effort will be made to enlarge the scope of publications in the near future. The last report contained a list of Vol. 1 and of Vol. 2 to circular 37. Since that time the following have been published:

No.	Title of Circular	Author
38	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
39	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
40	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
41	Home Building Contest	G. M. McCheyne
42	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
43	High School Clubs in Agriculture and Home Economics	Claire Parrish

Volume 3, Circulars 1 to 39 inclusive:

1	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
2	Program for Farmers' Round-Up and Housekeepers' Conference at Richfield, Utah	
3	Convention Program Farmers' Round-Up and Housekeepers' Conference at Logan, Utah	
4	Hints on House Furnishing	Calvin Fletcher
5	Program Leaflet of Home Economics Assn's.	G. M. McCheyne
6	Milk Testing in the High School, keeping records on Dairy Cows and Testing Milk for Butter Fat	W. E. Carroll
7	The Family Budget or Expense Account	C. L. Anderson & George B. Caine
8	Program Farmers' Round-Up and Housekeepers' Conference, Cedar City, Utah	Claire Parrish
9	Agricultural Extension Work in Utah	E. G. Peterson
10	Utah Girls' Home Efficiency Contest	Claire Parrish
11	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
12	Instructions for Flower Gardening Clubs	C. L. Anderson & J. C. Hogenson
13	Bread Making Club Instructions	G. M. McCheyne & J. C. Hogenson

No.	Title of Circular	Author
14	Canning Club Instructions	J. C. Hogenson
15	Potato Club Instructions	J. C. Hogenson
16	Sugar Beet and Mangel Wurzel Club instructions	J. C. Hogenson
17	Garden Club instructions	J. C. Hogenson
18	Illustrated Booklet and Play Contest Circular	J. C. Hogenson
19	Crop and Pig Club instructions	J. C. Hogenson & C. L. Anderson
20	Program Leaflet of Girls' High School Clubs	Claire Parrish
21	Program Leaflet Home Economics Ass'n's.	G. M. McCheyne
22	The House Fly	Harold R. Hagan
23	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
24	Program Leaflet of Girls' High School Clubs	Claire Parrish
25	Instructions in Poultry Management Club Work	Byron Alder
26	Program Leaflet of Home Economics Ass'n's.	J. C. Hogenson & C. L. Anderson
27	Program Leaflet of Girls' High School Clubs	G. M. McCheyne
28	Program Leaflet of Home Economics Ass'n's.	Claire Parrish
29	Program Leaflet of Girls' High School Clubs	G. M. McCheyne
30	Program Leaflet of Home Economics Ass'n's.	Claire Parrish
31	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
32	Outline for Home Furnishing and Decoration	Calvin Fletcher
33	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
34	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
35	General Outline of Home Handicraft and Menu and Table Service Projects	Claire Parrish
36	General Outline of Sewing and Baking Club projects	Claire Parrish
37	Food Facts—Project in Family Diets	Blanche Cooper
38	Baking Project	Claire Parrish
39	Farmers' Round-Up and Housekeepers' Conference—Monroe	

Volume 4, circulars 1 to 27:

1	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
2	General Instructions Boys' Farm Handicraft Project	L. R. Humpherys
3	General Instructions Boys' High School Club Project	J. C. Hogenson
4	House Plants—Selection, Propagation and Care	R. I. Evans
5	Convention Program Farmers' Round-Up and Housekeepers' Conference at Logan	A. C. Carrington & J. C. Hogenson
6	Program Leaflet of Home Economics Ass'n's.	Emil Hansen
7	Reading Courses in Agriculture and Home Economics	G. M. McCheyne
8	Farm Appliances Including Handicraft Work	J. H. Linford
9	Program Farmers' Round-Up and Housekeepers' Conference. Cedar City	I. C. Hogenson & L. R. Humpherys
10	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
11	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne

No.	Title of Circular	Author
12	General Rules—School—Home Project Work	J. C. Hogenson
13	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
14	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
15	Farm Management Demonstrations in Utah	E. B. Brossard
16	Some Factors that Determine Farm Profits in Millard County	E. B. Brossard
17	Program Leaflet of Home Economics Ass'n's.	J. P. Welch
18	Correspondence Study Course	G. M. McCheyne
19	Some Factors that Determine Farm Profits in Emery County	J. H. Linford
20	Some Factors that Determine Farm Profits in Sevier County	E. B. Brossard & R. H. Stewart
21	Program Leaflet of Home Economics Ass'n's.	E. B. Brossard
22	Exhibits and Score Cards of Field Crops	Lorin A. Merrill
23	Farming in Cache County	Wm. W. Owens & Wm. G. Woolley
24	Program Leaflet of Home Economics Ass'n's.	G. M. McCheyne
25	The Invalid's Room—Its furnishings and care	George Stewart
26	Some suggestions regarding Profitable Farming in Salt Lake County	E. B. Brossard
27	Some suggestions regarding Profitable Farming in Beaver County	G. M. McCheyne & Dr. R. O. Porter
28	Community Christmas Celebration and Play Service	E. B. Brossard & H. J. Webb
		E. B. Brossard & H. A. Christensen
		F. R. Arnold

The following is a complete list of the workers in the Extension Division, arranged according to the various projects:

Name	Time	Duties	Address
Administration			
John T. Caine, III	All	Director	Logan
Ida Mitchel	All	Clerk	Logan
Elin Jonson	All	Stenographer	Logan
Eric Johnson	One-half	Bookkeeper	Logan
Rebecca Yonk	One-half	Bookkeeper	Logan
Farm Demonstration—Specialists			
R. J. Evans	All	Assistant Director	Logan
		County Agent Leader	
Lorin A. Merrill	All	Asst. County Agent Leader	Logan
H. J. Frederick	One-sixth	Veterinary Science	Logan
L. M. Winsor	One-third	Irrigation and Drainage	Salt Lake
Ben R. Eldredge	All	Dairying	Salt Lake
J. W. Paxman	Three-Fourths	Dry-Farming	Nephi
County Agents			
R. H. Stewart	All	Carbon-Emery	Price
Joseph P. Welch	All	Millard	Hinckley
H. J. Webb	All	Salt Lake	Sandy
H. A. Christensen	All	Beaver	Beaver
M. L. Harris	All	Uinta-Duchesne	Roosevelt
W. P. Thomas	All	Weber	Ogden
Wm. W. Owens	All	Sevier	Richfield
Alma Esplin	All	Iron	Cedar City
C. W. Lindsay	All	Utah	Provo

Name	Time	Duties	Address
Junior Vocational			
J. C. Hogenson	All	State Leader	Logan
Mrs. C. P. Dorius	All	Assistant State Leader	Salt Lake City
E. W. Stephens	All	Assistant State Leader	Logan
Home Management and Demonstrations,			
G. M. McCheyne	All	State Leader	Logan
County Home Demonstrators			
Blanche Cooper	All	Box Elder Salt Lake	Salt Lake City
Hettie White	All	Millard	Hinckley
Correspondence Studies			
J. H. Linford	All	In Charge	Logan
Publications			
Lowry Nelson		Editor	Logan
Community Service Bureau			
F. R. Arnold	Part	In Charge	Logan

RECOMMENDATIONS.

The last five years have seen the Extension Division take its proper rank in the organization scheme of the Agricultural College. As the College, Experiment Station and Extension Division are now linked closely together, the great problems of the State will be attacked in a united and effective way. Giving all members of the Extension staff College rank aids materially in unifying the instruction given.

Additional work is ahead for the Division, and well trained people must be added from time to time. To complete the staff of specialists we need experts added in the following lines: Crops and soils, range improvemnet, marketing, general live stock, sheep and wool, irrigation and drainage, and horticulture. From present indications several county agents should be placed during the next year or so. Counties which have agents are becoming leaders, due to the progress made, and other counties are anxious to get the work started.

The Home Demonstration work needs additional help, and an assistant to the State Leader should be appointed in the near future. One Home Demonstrator has been placed in a county through government co-operation, and more well trained women will be needed for this work soon.

Though the office arrangement and equipment is now

quite satisfactory, it will be necessary at an early date to more efficiently group the offices for the proper correlation of the work.

Respectfully submitted,
JOHN T. CAINE, III.,
Director, Extension Division.

THE BRANCH OF THE AGRICULTURAL COLLEGE.

To the President of the College:

Sir: Herewith submitted is a report of present conditions at the Branch Agricultural College, together with statement of needs and prospects for the ensuing biennium.

All general conditions are good. Our faculty is united, enthusiastic, optimistic, in full sympathy with policy and purposes of the Institution, and loyal to Principal, President, and Board. Our student body is earnest, is rather more mature than the average high school student body, is characterized by seriousness of purpose, and is developing sentiment favorable to this section of the State. Our first College class is as large as could be expected, and is doing a grade of work that confirms the good judgment of the Board in establishing this department. The people of southern Utah are appreciative for the attention and encouragement and aid in development that the College and Branch College are giving them. They are generous in their patronage and support of the B. A. C.

While our physical conditions about the campus and buildings are fair, very important and extensive improvement is imperative to permit us to approach the standard of dignity, convenience, and efficiency that the people have a right to demand in any Utah State Educational Institution. The school site has natural advantages of such nature that it can be made very attractive and beautiful by reasonable improvement. For nineteen years the State has maintained the Institution on "the Hill" in Cedar City, but has never appropriated any money for the necessary blasting of rock, grading, hauling fine soil, purchase and planting of shrubs, trees, and so forth, making lawns and walks. I cannot over-emphasize the importance and very urgent need of these improvements for next year.

The legislative and executive action in cutting down the

B. A. C. budget two years ago, makes it necessary for us to request appropriations for many of the same repairs and improvements in old buildings that were listed on our former budget. The leaky roof, the worn-out floors, stairs, water-spouts, etc., that could not be covered by our last small appropriation are in worse condition at this time than they were two years ago. Further remodelling of the Library Building will give us much needed floor space that is not available now for any useful purpose. The great increase in number of men registered in mechanic arts courses compels us to provide more shop room. Notwithstanding that all the girls of the Institution have their afternoon work in the Science building, and all the laboratory work of science courses for men is in the same building, there are no dressing rooms or laboratories of any kind in the entire building. The same condition prevails in the Mechanic Arts and Gymnasium Building.

In all departments of the Institution and on the farms we have some very good equipment and are able to do effective work in elementary courses. However, the entire equipment of farm, shops, laboratories, and class rooms requires overhauling and supplementing in order to meet our legitimate needs at the present time. You will remember that the State has not made any special appropriation for equipment that is absolutely necessary to carry on the work demanded of us since this Institution was made a branch of the Utah Agricultural College. The old equipment of the Branch Normal School is not adequate for the large classes in all industrial subjects upon which strong emphasis is placed by the Branch Agricultural College.

Through the interest and generosity of the people of Cedar City and Iron County, the Institution has acquired ownership of a large tract of very valuable land with first class water right, that is ample for all our needs. Results are expected by the people, but we are handicapped in farming operations through the lack of implements and machinery for many important phases of the work. Many aspects of farm work that are taught in the class rooms as "essentials" are not demonstrated on our farm on account of this lack of equipment. Other parts of the necessary work have been done in the past

by borrowing from our neighbors. A reasonable appropriation for this department is one of our most urgent needs.

The Mechanic Arts department enrolls large numbers of young men in the elementary courses, but cannot hold any reasonable percentage of these classes in the advanced work. In the Woodwork Shop we have only hand tools, and the interest in this sort of work cannot be sustained without a good equipment of power-driven machines that relieve the monotony, and increase the possibilities for technical work in wood construction. The Ironwork Shop is much better equipped. We have a number of high grade machines, but cannot take our students through all the standard exercises required in these courses on account of the incompleteness of the equipment.

Southern Utah is a great live-stock section; said to ship more cattle and sheep to western and eastern markets than any other part of our State. It is also said that we ship more poorly bred and poorly fed stock than any other section. This

Pure Bred	condition has been recognized by the B. A. C.
Live-Stock	for some time, and we have done considerable work to improve live-stock breeding and feeding. Up to the present time most of our work

has been theoretical, being done through the means of textbook, charts, and lectures. We have a few first class animals, but cannot show our students and patrons good specimens in many of the breeds of cattle and sheep that should be established in this section. A small sum of money expended for this purpose would prove a judicious investment on the part of the State.

	We are asking for equipment for a small dairy in order to give training to a few young farmers, with the hope that they will lead out in the development of this most important industry. We have a room suitable for this work.
Dairy	

In order to shelter all our animals and to provide storage room for feed and crops, and to house implements and machinery, we require additional shed room. No provision has

Sheds	been made as yet for proper handling and care of sheep, hogs, and chickens. The scientific management of fields and pastures will require more fencing.
-------	---

Music conditions in the B. A. C. are improving very rapidly. We have a mixed chorus of one hundred twenty-

five voices, a good orchestra, and band. However, we have to deny many applicants registration in the orchestra and band

on account of having so few instruments. Many
 Music students who desire instruction in piano cannot
 secure instruments for practice, and the B. A. C.
 can offer only one instrument for this purpose. Improvement
 of this condition would contribute greatly to the strength and
 popularity of the B. A. C.

The Commercial department is doing excellent work, and
 is well equipped for a small number of students. This is one
 of the most popular departments we maintain, and will justify
 any reasonable expenditure that may be necessary for additional
 equipment to keep pace with its growth.

The classes in Home Economics have become so large and
 enthusiastic that we find our facilities in this line have been
 worked out on too small a scale. The condition
 Home Economics demands more desk room, more stove room, and
 assistance in instruction. The department
 would be more consistent with our teaching and
 the ideals held before our young women if we could have a
 small sum of money for the simple decoration of these rooms.
 More sewing machines, cutting tables and wardrobe room must
 be provided for Domestic Art classes.

The Art Department has no special art equipment of any
 sort. This work needs encouragement through the purchase
 of necessary desks, shelves, cabinets, models, etc.

The Library has a splendid collection of old books covering
 a wide range of subjects. However, at this time it
 is lacking in up-to-date reference works of all kinds, and new
 thought on all technical lines. It is furnished
 Library with a lot of old, broken chairs, and rough,
 homemade tables, and should be provided with
 neat, attractive, and durable tables, chairs, stacks, and stands.

The heating plant continues to give us much annoyance
 through new breaks in steam-lines, imperfect drainage of returns,
 and insufficient radiation. Our former estimates for this
 matter have been too low, and parts that were considered in
 good condition have proved to be defective.

The Science Building foundation is being undermined
 through exposure to water under the ground surface. I urge
 that a small amount of money be provided for cement protection
 over the exposed brick in foundation wall.

As a precaution against panic and disaster in case of fire, there should be erected a steel stairway from the Auditorium in the Science Building. At frequent intervals during the school year we have from 500 to 900 people in this room at one time, and, although this room is on the top floor, there is but one narrow stairway leading to a long, blind hall on the lower floor.

The very extensive laboratory work in domestic science, chemistry, physics, biology, agriculture, etc., required in the Institution makes it imperative that we provide an adequate supply of gas. At the present time we have no gas plant of any kind.

The old water mains connecting our plant with the street mains are too small for present needs, and are badly decayed. The maintenance of this line is very expensive and the supply of water does not furnish necessary pressure for fire fighting.

Perhaps the matter of greatest importance that demands attention and consideration by the Board and Legislature, is the matter of additional maintenance appropriation. With the practice of all possible economy and strict attention to details we have found it impossible to carry on the prescribed work of the Institution without incurring some indebtedness. During the first three years of our work as a branch of the Agricultural College this deficit amounts to approximately \$9,000.00, and will probably be increased somewhat this year. It is my recommendation that direct appropriation be requested for the payment of this deficit, and that some means be provided for increasing our annual maintenance fund from about \$21,000.00 to at least \$30,000.00.

The department of English and Biology need additional instructional force; Domestic Science and Domestic Art departments are over-crowded and laboratory assistance must be provided; the Library demands the full time of a competent librarian; and the principal's office is in urgent need of a registrar and secretary. In order to reward faithful service and compensate for personal sacrifice, and to permit advancement in scholarship and technical training, it will be necessary to advance the B. A. C. faculty salary schedule from twenty-five to thirty per cent. Many of our best men and women are working in this State Institution of junior college grade for smaller

salaries than are paid to teachers in some of the small public high schools of the State. We cannot retain the services of these people indefinitely and command their respect, enthusiastic service, and loyalty, unless just and fair compensation be given them.

The future of the Branch Agricultural College of Utah seems to be filled with great promise and possibilities for real worth-while service. Its mission is clearly defined, its influence is already a potent factor in industrial development, moral uplift, and general educational improvement in southern Utah. With opportunity for growth and development of the Institution will come greater power and usefulness in the training of citizens and the development of homes and industries in this vast empire.

Following is a summary of the needs of the Branch of the Agricultural College for the next biennium:

REPAIRS AND IMPROVEMENTS.

Library Building—Floors, stair-treads, water spouts, interior remodeling.	\$ 1,850.00	
Science Building—Roof, floors, stage, foundation, outside door to kitchen, steel stairway from au- ditorium, lavatories and cesspool	3,325.00	
Mechanic Arts and Gymnasium Build- ing—Floor, toilets, wash-room, fire protection	850.00	
Heating Plant Improvement for All Buildings	1,800.00	
	<hr/>	
Total for Repairs.....	\$	7,825.00

NEW BUILDINGS.

Granary	\$ 275.00
Machine shed at College.....	250.00
Machine shed on Dry Farm.....	100.00
Horse Stable and Yard on Dry Farm..	350.00
Six "A" Hog Pens.....	75.00
Silo	325.00
Cement root-cellar	275.00

Poultry house and runs.....	150.00
Feed room in old shed.....	100.00
Addition to old shed and yard (60 ft.) .	700.00
Greenhouse	300.00
House for Caretaker.....	2,000.00
<hr/>	
Total	\$ 4,900.00

CAMPUS IMPROVEMENT.

Blasting rock, grading, hauling fine soil, making lawns and walks, trees, shrubs, flower-beds, gates, etc.....	\$5,000.00
New Water Mains.....	500.00
Outside fire hose and cart.....	150.00
Lumber for seats on track.....	175.00
<hr/>	
Total for Campus.....	\$5,825.00

FURNITURE AND EQUIPMENT.

Farm implements and machinery...\$	935.00
Agronomy laboratory	219.00
Live stock for class study, judging, exhibition, and breeding.....	900.00
Dairy	600.00
Scales for weighing stock and farm products	150.00
Dipping vat for sheep and hogs.....	50.00
Veterinary science instruments.....	150.00
Grain chopper and motor.....	325.00
Electric water heater in milk room..	100.00
Cement troughs and stands in hog pens	50.00
Fences on both farms.....	300.00
Biology Department	830.00
Woodwork shop machines and tools	4,490.00
Ironwork shop machines and tools..	2,095.00
Commercial department, typewriters, adding machine, duplicator, desks, stools, tables, etc.....	1,570.00

Domestic Science department — stoves, sundry utensils, floor covering, wall decoration, dining room tables, chairs, cabinets, etc.	925.00
Domestic art department, machines, tables, chairs, cabinets, show-cases, wall decorations, etc.	522.00
Chemistry and Physics laboratories —balances, water still, hood-fan and motor, sundry small apparatus, gas plant.	1,597.00
Art Department—tables, desks, models, etc.	202.00
Library tables, chairs, book-racks, magazine and paper stands.	625.00
Library books, maps, charts, etc.	1,000.00
Furniture and stage-settings for stage	400.00
Lockers for all buildings for students' use	600.00
Instruments for Music department.	2,260.00
Chairs for Auditorium.	400.00
Total	<hr/> \$21,295.00

SUMMARY OF TOTALS.

Repair and Improvement of old buildings	\$ 7,825.00
New Buildings	4,900.00
Campus Improvements	5,825.00
Furniture and Equipment	21,295.00
	<hr/> \$39,845.00
Deficit (approximately)	13,000.00
Special additional maintenance (10,000 per year).	20,000.00
	<hr/>
Grand Total	\$72,845.00

Respectfully submitted,

ROY F. HOMER,

Principal.

Departments of Instruction

DEPARTMENT OF ACCOUNTING AND BUSINESS PRACTICE.

To the President of the College:

Sir: As per your request dated October 8, I am submitting herewith a report of the Department of Accounting and Business Practice for the past biennium.

The department shows a very substantial increase in the number of students enrolled. From the table submitted it may be observed that the total registration in 1914-15 was 222, and in 1915-16 it was increased to 258, showing an increase of 36 students. Indications are that we shall have a normal increase the present year. The enrollment is now 245. With the winter students added we shall, in all probability, enroll over 300 this year.

The teaching force consists of one professor in charge of the department, two instructors, and an assistant in typewriting. No increase in the number of teachers will be necessary. We shall need approximately the same assistance as at present provided, unless we shall be able to install the additional equipment necessary to conduct a model office. In that event, the assistant in typewriting should be made a regular faculty member and be given charge of this new feature. This would involve a slight increase in cost of teaching.

In the past the typewriting students have not received the attention they should. The results were accordingly. This year we have been given an assistant who devotes practically all his time in the typewriting room. Students are tested for speed and accuracy, and the results charted. This acts as a great stimulus to greater efficiency. The charting of the relative efficiencies shows up the weak and lazy students. The lazy ones are urged to do more, and the weak ones are helped. The results are certainly gratifying.

In order that we might utilize the department to the best advantage, it would be a very excellent thing if we might add to the equipment a full complement of office appliances.

Our students ought to be given instruction in the use of the various other office devices, as well as in that of type-writing. Students should be taught to operate such appliances as the dictaphones, comptometers, calculating machines, billing and bookkeeping machines, addressing, stamping, sealing, numbering and duplicating machines. The total outlay would not exceed \$1,500.00. There is a possibility of combining this work with the College Dictaphone Bureau. The machines might be made to do service in both. If placed in charge of a good man, it would greatly increase the instructional value of the department, as well as serve the administration of the College.

In the matter of rooms there would be very little rearrangement necessary to accommodate the new machines.

Respectfully submitted,

P. E. PETERSON,
Professor of Accounting.

DEPARTMENT OF AGRONOMY.

To the President of the College:

Sir: The last two years have been very favorable ones for the Department of Agronomy. The number of students taking the work has been as large as could be accommodated to the best advantage, and the steady rise in the grade of students has made it possible to do better work than could be done a few years ago.

The following courses are at present offered by the department, with instructors as indicated:

- a. Elementary Agronomy Aaron F. Bracken
1. Cereal Crops Aaron F. Bracken
2. Forage, Root, and Miscellaneous
Crops Aaron F. Bracken
3. Seeds and Weeds (Not given in
1916-17)
4. Judging market types of crops
(Not given in 1916-17)

Courses and Registration	5. Soils	Orson W. Israelsen
	6. Management of Arid Soils	Orson W. Israelsen
	7. Comparative Soils	Orson W. Israelsen
	8. Advanced Laboratory in Soils...	Don W. Pittman
	9. Dry-Farming	Aaron F. Bracken
	10. Irrigation Practice	Orson W. Israelsen
	11. Farm Management	Mark Green
	12. Seminar	Dr. F. S. Harris
	13. Research	Dr. F. S. Harris

There have been but few changes in the staff during the last biennium. Mr. H. W. Stucki, assistant in Agronomy, resigned in 1915 to engage in practical farming and was succeeded by N. I. Butt, B. S., from the U. A. C. In 1916, Mr. D. W. Pittman, B. S., from the Iowa State College, and M. S. from the U. A. C., was made instructor in Agronomy. Mr. George Stewart was given a leave of absence for the year 1916-17 to pursue graduate work at Cornell University. His work is being carried on largely by Mr. A. F. Bracken, who has been foreman of the Nephi dry-farm sub-station during the past two years.

In addition to the regular routine of instruction, the members of the department staff have done a great deal of work for the diffusion of agricultural information. Quite a number of correspondence students have registered for courses in Agronomy, each of whom has required considerable attention. A number of correspondence courses have also been given by members of the staff in outside towns to school teachers and farmers. Thousands of letters have been written in answer to requests for information, and a great many Farmers' Institute lectures and demonstrations have been given.

No small part of the energies of the department has been devoted to research in the Experiment Station. The following publications cover some of these researches:

Publi- cations	1. The Commercial Production of Sugar Beet Seed in Utah, by F. S. Harris.
	Utah Experiment Station Bulletin No. 136.

2. The Movement of Soluble Salts with the Soil Moisture, by F. S. Harris. Utah Experiment Station Bulletin No. 139.
3. The Effect of Alkali Salts on the Germination and Growth of Crops, by F. S. Harris. Journal of Agricultural Research, Vol. 5, pp. 1-53, October 4, 1915.
4. Some Correlations in Sugar Beets, by F. S. Harris and J. C. Hogenson. Genetics, Vol. 1, No. 4, pp. 334-347, July, 1916.
5. Soil Alkali Studies, by F. S. Harris. Utah Experiment Station Bulletin No. 145.
6. The Irrigation of Wheat, by F. S. Harris. Utah Experiment Station Bulletin No. 146.
7. Dry-Farming in Utah, by F. S. Harris and A. D. Ellison. Utah Experiment Station Circular No. 21.
8. Factors Affecting the Evaporation of Soil Moisture, by F. S. Harris and J. S. Robinson. Journal of Agricultural Research, Vol. 7, December, 1916.

The following books have been published by members of the staff:

The Principles of Agronomy, by F. S. Harris and George Stewart, The MacMillan Co., Publishers, New York (1915).

The Young Man and His Vocation, by F. S. Harris. Richard G. Badger, Publisher, Boston (1916).

In addition to the publications named, more than twenty-five articles for farm papers have been prepared.

The department is equipped to do a good class of work, but the present laboratory facilities are taxed to their utmost, and provision should be made to increase the quantity of standard apparatus, as well as to add new apparatus for some of the advanced work. The desks in the soils laboratories should be renovated so that they will accommodate more students.

The department feels itself constantly hampered by the need of a vegetation house where crops can be grown at all seasons of the year. It is very difficult indeed to obtain satisfactory results by growing plants in the ordinary laboratory room. As soon as funds can be secured a suitable vegetation house should be provided. This could prob-

Vegetation
House

ably be used in conjunction with some other department.

Since it has become necessary for the head of the department to devote so large a portion of his time to the work of the Experiment Station, the services of an additional well-trained man should be secured. This man could devote part of his time to regular instruction, and the remainder to extension work in Agronomy.

The outlook for Agronomic work in the Institution continues promising. Our graduates are having a distinct influence on the agriculture of the State, and the demand for them is increasing each year. The farming interests are awakening to the fact that much valuable information regarding farm practice can be obtained in school in a much shorter time than by practical experience. When this is thoroughly understood, the College will be able to serve the people more fully than it is able to do at present.

Respectfully submitted,

F. S. HARRIS,

Professor of Agronomy.

DEPARTMENT OF ANIMAL HUSBANDRY AND POULTRY.

To the President of the College:

Sir: I have the honor to submit the following report from the department of Animal Husbandry, which has been called for. The various items mentioned have been gone over carefully by the members of the department, and the pressing needs are herewith included.

Courses offered.

Animal Husbandry 1.....	Prof. Geo. B. Caine
Animal Husbandry 2.....	Prof. Geo. B. Caine
Animal Husbandry 3.....	Prof. W. E. Carroll
Animal Husbandry 4.....	Prof. W. E. Carroll
Animal Husbandry 5.....	Prof. Geo. B. Caine
Animal Husbandry 6.....	Prof. Geo. B. Caine
Animal Husbandry 7.....	Prof. Geo. B. Caine
Animal Husbandry 8.....	Prof. Geo. B. Caine
Animal Husbandry 10.....	Prof. W. E. Carroll
Animal Husbandry 25.....	Prof. W. E. Carroll
Dairy 1.....	Caine, Mr. Bingham

Dairy 3.....	Caine, Mr. Bingham
Dairy 4.....	Mr. Bingham
Winter Course (An. Hus. 4).....	Prof. W. E. Carroll

Foods 4, a class of 9 students in the School of Home Economics, is also being given this year by a member of the Department.

In addition to the class work, members of the department are called out on Institute and Round-Up work, and have had practically all the judging at county Extension fairs to do. One member is secretary of the Work Utah Dairymen's Association, another is secretary of the Utah Livestock Breeders' Association, and secretary and executive officer of the Utah State Board of Horse Commissioners.

The Department as now organized is unable to give all the work for which application is made. Reference is made especially to courses in Sheep and Beef Cattle Management, though the latter is being attempted the second semester of this year. A man in range management would relieve this pressure and Range make a valuable addition to the Department. Management

We have felt for some time that we are not doing as much for the State as we should, for the very reason that these interests are primarily range interests, and we have been so crowded that we have been unable to spend the time necessary to keep in close touch with range conditions.

If the Department could be given one or two teaching fellowships, the higher salaried time thus relieved, could be directed to more profitable use than is now possible.

As soon as the Dairy Building is completed we will be much in need of a man trained in Dairy Manufacturing. The need for a new Dairy Building, we take it, is generally understood.

A beginning was made in 1913 on some bull pens. Nothing has been done since. The present method we are forced to use in handling the bulls is inefficient, dangerous not only to the men at the barns, but also Needs to visitors, and very wasteful of corral space which we so much need. This improvement would make possible the removal of two shacks.

The Dairy Barn is in great need of being remodeled. The stalls are very unsatisfactory, and have been long out of date.

The department is in great need of a granary. The building could be made of sufficient capacity to store the grain fed by all departments. We are forced to buy at a loss now, because of lack of room to store a year's supply.

It is very desirable that some laboratory work be added to our course of Animal Nutrition. A laboratory equipped to handle from thirty to fifty students would probably cover the needs for some years to come.

I attach hereto a report of the work in the Poultry Department.

DEPARTMENT OF POULTRY.

To the President of the College:

Sir: In response to your request of October 6th, for a statement of the work in my department, and also of the needs for the coming year, I have the honor to submit the following:

We have enrolled in the department at present, fourteen students. We are giving only the general course in Poultry-raising this term, but expect to give two or three other courses next term. I am doing practically all of the work in instructing in this department, Mr. General Madsen taking the classes only when I am called away on extension work. We have a number of students in correspondence work, and several that have finished the course during the summer. For next year I think we will be able to run along as we are at present, as far as help is concerned. We are greatly handicapped, however, in our experiment station work at the poultry plant because of the fact that we have no one who is directly in touch with the work all the time. This work goes on every day in the year and it is quite a drawback not having someone living near to look after the work, especially on Sundays and holidays. I Needed Help asked two years ago for a building at the poultry yard for the foreman of the poultry plant. A building of this kind, or the use of one of the

cottages now built, would greatly increase the efficiency of this work. The class rooms we are now using is not satisfactory, but is perhaps the best that we can expect at present; at least, that was what we were told a year ago. This work is practically the only work that is being done in the basement of the Main Building. The room is poorly lighted, poorly heated, and the ventilation is very bad. If some of the changes suggested could be brought about in some way, it would greatly react, I am sure, to the usefulness of the department.

Respectfully submitted,

BYRON ALDER,

Assistant Prof. of Poultry Husbandry.

Respectfully submitted,

W. E. CARROLL,

Professor of Animal Husbandry.

DEPARTMENT OF ART.

FINE ART SECTION.

To the President of the College:

Sir: During the last two years the Fine Art Section has had a decided and healthy growth. The interest shown in our work by the faculty of the College has assisted very materially in this rapid development.

In the section of fine art, the following courses are given:

Art 1. Free hand Drawing.

Art 2. Structural Free hand Drawing.

Work of Art 3. Drawing and House Planning.

Department Art 4. Free hand Drawing and Nature Study.

Art 5. Studio.

Drawing.

Painting.

Sculpture.

Illustrations.

Illustrations for advertising.

Illustrations for scientific purposes.

Pictorial composition.

Art 6. Advertising.

Summer School.

I have been instructing in all classes in fine art and Art 21, besides assisting with some of the work in applied Arts. Besides our regular class work, we have had extension class work. Rooms have been built and decorated for exhibition at the Housekeepers' Conference, and exhibits have been sent to the Cache County Fair and to the State Fair. An exhibition was made on the demonstration train. We spent eight days on the train giving lectures and demonstrations at Nephi, Payson, Spanish Fork, Provo, American Fork, Lehi, and Murray. Costumes have been designed for the several College plays and for the Pageant.

The teaching force is adequate for internal instruction at the present time, but the demand is becoming so great for art work in the Extension Division that some assistance will be necessary. If possible, a demonstrator should

Teaching Force	be employed to give instruction and aid in the Beautifying of the Home and the Farm, and in giving advice in Civic Improvements.
-------------------	--

An instructor to do part time work in the Extension Division and to help with the instruction in our classes, would leave us free to do more extension work and demonstrations, and to conduct more extension classes, for which there is a great demand.

We are very much in need of a more varied collection of casts of good examples of sculpture and architectural details. The departmental appropriation is not always ample for casts and models for fine Art. If about one hundred dollars could be stipulated for this division of the work it would aid materially in better equipping the studios. We are very much in need of display cases, frames, and lockers.

Exhibition Room	We are handicapped in the development of our work in not having an exhibition room in a more convenient location. If a room could be provided on the first floor, or in some place where there are fewer stairs to climb, many more persons would see our work who now find it too difficult to visit the studios.
--------------------	--

The annual exhibition of the work of Utah artists has always been well patronized by the artists, and there is always a large attendance at these exhibitions. In connec-

tion with the exhibition of last year we added a section of handicraft work. Invitations were sent out to the various women's organizations throughout the State for craft work to be exhibited at the Housekeepers' Conference. A great variety of work was sent, it, and a number of things sold. The idea of this exhibition is to stimulate the craft workers and to encourage the organization of exchanges or markets for this work. Utah is more fortunate than many other states in having a population of many nationalities. The people have brought a great many different crafts from the old world, which, if properly encouraged, would be of great economic value to the State. We are in need of good examples of furniture, draperies, rugs and carpets, wall coverings, pictures and art objects. To make it possible to better train the students in home making, practice rooms for decorating and assembling of furniture and furnishing should be provided and a permanent exhibition of home making be established. An appropriation of about \$300.00 would be ample for our present need. Many of our students come to us who never have an opportunity of seeing things which make the home more beautiful. We should surround them so that they would come in daily contact with the beautiful things of the world. To stimulate them to ideals of beauty would be a great factor in making better farmers and housewives. A beautiful home is the greatest incentive to keeping our boys and girls on the farm. The greatest investment the State can make is in teaching the people to make better homes.

In teaching home decoration we find it very difficult to secure good examples of furniture and furnishings. Things of poor quality and workmanship should not be a part of the home. Our ideal of home making is to build for permanency. It is impossible to do so with cheap and shoddy goods. We could very soon have examples of good furnishings and decorations if the different departments would co-operate in the planning and building of these things. The best work of the students should be retained by the College, and this work should be assembled into rooms. These rooms should be kept as a permanent exhibition so that our friends could see the extent of the work of the College and our students could receive inspiration from the work which has been done before them.

The aim of the department is to teach an appreciation of beautiful things, to raise the taste and the desire of our people for better homes, and to aid those who wish to create beauty, both in art and the industries. The assistance and co-operation of our fellow workers is always very much appreciated.

Respectfully submitted,

J. S. POWELL,
Professor of Fine Art.

APPLIED ART SECTION.

To the President of the College:

Sir: Complying with your recent request, I beg to submit the following report covering briefly the work of the section of Applied Art during the past biennium, and the needs for the coming two years.

Courses given in the department (Applied Art Division):

Art 22, House Furnishing.

Art 23, History of House and its Furnishing.

Art 24, Costume History and Design.

Art 26, Furniture Design.

Arts 27B, China Painting.

Art 27F, Leather Work.

Art 27G, Show card work.

Art 27H, Fabric Decorating.

Art 27C, Copper Work.

Art 27J, Architectural Comp.

Art 27E, Basketry.

Art 27D, Jewelry.

Art 27K, Advanced Design.

Art 25, El. Design.

Summer School.

Salt Lake Extension Class.

Logan Extension Class.

Art 21 is taught by Professor Powell; the Logan Extension Class and Art 24 were taught conjointly by Professor Powell and myself. Professor J. Leo Fairbanks assisted with the Salt Lake Class; the rest of the work was carried on by the writer.

The present teaching force will probably be adequate,

except possibly with the Art 27 Studio work, where some student or other assistant may be needed. These students select their time during the first two or last three periods daily, except Saturday when they come at all hours of the day. Last year 114 students registered for this work. The registration along these lines is slightly less this year, due to our efforts to have students take Art 1 and 21 first. Another year will no doubt see a normal increase again. This year the minimum number of students appearing for work during each of these 25 studio periods per week is 10, and the maximum 21. This is as many as one person should attempt to handle in this kind of work, as students are pursuing simultaneously several different kinds of work. Art 27K is required to be taken simultaneously with Domestic Art 3 and 4 (Art Needlework), but because of an oversight in registering, this was not attended to this year. With this in effect, as desired by the Professor of Domestic Art and by Dr. Porter, it will mean another group of from ten to twenty-five students for us to provide for.

Art 22 (House Furnishing and Decoration) which was once one of our most popular courses, has not, I feel, during the past two years received as much support as it should. This course was established at the request of the School of Home Economics, and we feel it is the central point around which most of our work revolves. I took the matter up with Dr. C. W. Porter, and he says he wants to support the class, and will do more in the future to call the attention of students registering to the class. In time it is sure to become one of the most important lines of work in the School of Home Economics. A number of leading institutions of the land require this of all Home Economics students.

With a normal increase in these lines of work, we may need some additional help, otherwise the present teaching force will be adequate.

We will need no other assistance, unless it be with the firing of our china kiln. We fire the kiln between thirty and forty times each year; each firing requiring $2\frac{1}{2}$ to 3 hours. In the past I have had to manage the kiln at the same time as I conducted work in the studio. A little assistance here will greatly add to the efficiency of this work.

We should continue to add to our collection of good examples of fine work. We are proud of what we have, but the collection is yet far from adequate to our needs. Fine examples of workmanship are to the art student what good literature is to the student of English. For this work

and for the collection of students' work we
 Proposed are making, we need additional exhibition
 Development cases. We should add a few more lockers
 and tools for more students in Copper work.

If this work is to continue to grow, more bench room will be imperative. This can be provided as suggested under a later heading. New cupboards and filing cases for drawings and illustrative material are much needed, also a desk to replace the little, old, oak table I am at present using. Celluloid envelopes are needed to protect illustrative material from damage while in use by students. The establishment of an Art reference division of the library would be of untold help to us. In this the magazines on fine and industrial arts, architecture, and so forth should be kept, as well as photographs and prints of the best work of the ages.

We are in need of a room for Art reference and study. The present copper working room might answer this purpose if properly fitted up, and the little garret room under the roof might be converted into an art metal room by
 Needs putting in a floor, adding two small windows,
 and casing up walls and stairway. This, with
 the addition of a work bench with four vices,
 should not cost more than \$150.00 or \$200.00. This would not only give us our much needed room, but also would remove the noise of the shop from the third floor.

The south attic of the main building could well be fitted up as an exhibition room for the whole Institution. Here could be kept graphic charts, showing the organizations of the school and the courses of instruction. The
 Exhibition aims and work of each department could here
 Room be displayed, which, of coures, should constantly be kept up to date. With this could
 also be established a museum of industries
 and arts especially connected with the upbuilding of this State. Such a room would, I feel, do much to help each department to better understand the other, and would aid

visitor and student alike to see the correlation of the whole institution.

In addition to the teaching done in the department during the past biennium, thirty-eight lectures on different phases of House Furnishing have been given in different parts of the State, in addition to free advice being given numerous home makers in the Extension Work furnishing and decorating of their homes.

A special feature along this line was arranged for by Miss Cooper in Brigham City, where I was called to take a group of home makers into one of the homes and have it redecorated and the problem of refurnishing carried out before them, largely with the materials already in the home. Questions flew thick and fast, and were answered as far as possible by actual demonstration. This kind of work, I feel, will be productive of much good. The expense was borne by the local association. Along this line, also, was prepared for the Extension Division a bulletin on Hints on Home Furnishing, one as an outline for the associations to study, one on basketry, and one on block printing and stenciling. I have also prepared, or have in course of preparation, complete study outlines with instructional sheets accompanying, of china painting, fabric decoration, leather work, basketry, wood ornamentation, copper work, and design.

Six articles have been furnished to magazines on applied art, and sixteen are now in course of preparation to be published soon.

Two exhibitions of Utah Arts and Crafts, with annual Studio Tea, have been held with notable success. The last was accompanied by a collection of handicrafts work from all parts of the State, which in the main, was placed on sale. The exhibits were not only interesting, but the move was one step towards bringing the consumer and producer together, with profit to both.

Another phase of Applied Arts' activity was the designing of the Pageant costumes; also numerous costumes for our College plays. These have been chiefly the work of Professor Powell and his class in costume design.

During the 1915 Round-Up, four model rooms, full size, were prepared, decorated, and furnished for the Extension Division, as a demonstration in House Furnishing.

It has been the policy of the department to encourage manufacturers of worthy products to demonstrate their merits before our students. Last winter the Acme Paint Company gave a demonstration in the new Tiffany finish in wall painting. The Ashton Brick and Tile Company also conducted, through our aid, a house designing contest with essay. Some worthy prizes were awarded and much good was done those who entered the race. A similar contest will be attempted this year.

The past biennium has, on the whole, been a very prosperous one for Applied Art, and with the aid herein suggested the coming biennium promises much more.

Respectfully submitted,

CALVIN FLETCHER,

Professor of Applied Art.

DEPARTMENT OF BACTERIOLOGY AND PHYSIOLOGICAL CHEMISTRY.

To the President of the College:

Sir: I submit herewith a report of the Department of Bacteriology and Physiological Chemistry for the present biennium.

The courses offered by the department are given below:

- Bacteriology a (Elementary).
- Bacteriology 1 (Agricultural).
- Bacteriology 2 (Household).
- Bacteriology 3 (Pathogenic).
- Bacteriology 4 (Soil).
- Bacteriology 5 (Dairy).
- Bacteriology 6 (Sanitary Analysis).
- Bacteriology 7 (Research).
- Bacteriology 8 (Sanitation).
- Physiology 1 (General).
- Physiology 2 (Digestion).
- Physiology 3 (Physiological Chemistry).

The laboratory work in Bacteriology has been conducted during 1914-16 by Mr. L. A. Smith, who was very careful and efficient in the work, and I wish to take this occasion to express my appreciation of his work. At the

commencement of this year, Mr. Smith resigned to engage in other work, and the vacancy was filled by Mr. Carter, who at the present time is conducting the laboratory work and is teaching Bacteriology 3. His work is equally careful and efficient. The remainder of the teaching work has been, and is being done by myself. The present teaching force will probably be sufficient for the next biennium, as, beginning with this year, the work in Physiology 1 and 2 has been transferred to Dr. R. O. Porter.

The Department showed an increase in registration last year over the preceding year, and when the registration for the second semester's work is complete, there will probably be as great an increase in registration this year.

Students Bacteriology 1 is repeated during the second semester, and the registration in this course during the second semester is always much greater than during the first. Bacteriology 4 has been called for by students this year, but it has been impossible to give it on account of lack of room. However, with the new laboratory which has been provided for this work, it will be given during the second semester.

The department moved into its new quarters on the second floor of the Chemistry Building during the biennium, and is now located in rooms which are very convenient and well lighted. But, due to lack of

Present class room, it has been necessary to hold all
Location lecture work in the laboratory, a condition which is far from satisfactory. Furthermore,

in the past it has been the policy to purchase, with the funds allotted to the department, one or two new microscopes each year. Due to the great increase in the price of chemicals the allotment recently has been barely sufficient to purchase the necessary supplies, and

Additional the department is badly in need of additional
Funds Needed equipment. Therefore, there should be appropriated to the department next year two thousand dollars, in addition to the regular assignment, for the purchase of microscopes, an autoclave, an incubator, a media desk, and other equipment which is essential to the doing of efficient work.

For the first time in the history of the Institution the department has a special laboratory in which the experi-

mental work can be conducted. This has resulted in this important phase of the work being advanced to a greater extent than ever before. Many problems of importance to agriculture are being attacked, and a number of scientific papers dealing with the results of this work have been published in the leading research journals of the country during the past biennium.

The future of the department is exceptionally bright, for each year brings forth new discoveries in the field of bacteriology and the students, as a whole, are beginning to appreciate more than ever the value of a knowledge of this subject to them in their life's work.

Respectfully submitted,

J. E. GREAVES,
Professor of Bacteriology and
Physiological Chemistry.

DEPARTMENT OF BOTANY.

To the President of the College:

Sir: Botany should stand as the interpreter of plant life. It is important that the agriculturist should have a love for plants. It is important that he should understand the nature and composition of plants; that he should understand how a plant lives, and the purpose or function of each plant structure; that he should appreciate growth, of what it consists and the relation to it of soil and climatic effects; that he should understand the various means of reproduction and propagation of plants. It is important that he should appreciate the dependence of all animals upon plants for food. He should know the plants which furnish human food and comfort. He should understand the life habits of that horde of microscopic plants, so beneficial, or so destructive, to man and his operations. Particularly should he know western plants, and plants in their relation to western conditions. It is the mission of botany to teach him these things and the combinations of conditions which tend to produce the maximum in quantity and quality.

To accomplish these ends, various courses are being given by the botany department. These courses have been adapted

to western conditions, and concern themselves chiefly with those things which, it is felt, will be of most use in the life of the man or woman taking the course.

The laboratories are becoming well equipped to handle the work in most of the twelve courses in botany which are offered but much more is needed for economic botany and for forestry. About one hundred students are registered for botany this term, and two additional courses are to begin next term. The courses offered this term include general botany, plant physiology, pathology, ecology, and seminar for advanced students. Next term, systematic botany and technical plant pathology will be added.

Logan is very well situated for work in botany, because the range of environmental conditions is so great. Within a radius of a few miles from the College, a wealth of plant life is available. Field work, is, therefore, coming into greater prominence all the time.

One-half of the aggregate time of the men in botany is devoted to Experiment Station work. This time is being given at present to a study of potato diseases, California Peach Blight, a pasture survey, and a plant disease survey of the State.

Much more equipment is needed for this work, particularly the equipment of a culture room with a continuous current of electricity for incubators and a paraffin oven. A good incubator with a compartment for keeping organisms in cold storage is also needed.

In the way of supplementary material, the department is in great need of equipment. A good demonstration museum should be developed, in which could be seen and studied the common diseases of plants, especially those of economic importance, in all stages of their development. In this museum should be found the native plants of economic importance on the ranges, pastures, and farms of the inter-mountain country; also a collection of our wild flowers, correctly named, and of the various weeds and plants, poisonous to man and animal.

A plant disease control house is needed even more than the museum. This would enable Station staff to work the entire year with fungus diseases on living plants instead of for a brief growing season, and would furnish plants in all

Disease stages of development, for comparison at the
 same time. This would save an immense amount
 Control House of time in determining the life habits, and the
 control of plant diseases. Such a house would
 also enable students and farmers who come to the College in
 great numbers for that purpose, the opportunity of seeing and
 studying some of our serious diseases in their various stages
 of development on the living and dying plants. It would make
 the demonstration of plant disease control many times more
 effective, and would consequently save the cost of such a house
 in revenue to the farmers, many times over each season.

Respectfully submitted,

GEORGE R. HILL, JR.,

Professor of Botany.

DEPARTMENT OF CHEMISTRY.

To the President of the College:

Sir: The growth of the Department of Chemistry
 since the completion of the new chemistry building, has been
 phenomenal. Last year 237 students registered for one or
 more courses in chemistry, an increase of 30% over the highest
 enrollment previously attained in the history of
 Growth Rapid the Institution. This year 268 students have
 enrolled for courses in chemistry, a 13% increase
 over last year's registration. Moreover, the character of the
 work done has improved since we moved into well lighted and
 ventilated laboratories, provided with hot and cold running
 water distilled water, gas, compressed air and steam. The la-
 boratories are not fully equipped with desks, and the most
 urgent need of the department at the present time is complete
 desk equipment.

One hundred fifty-one students are now studying inor-
 ganic chemistry; no more can be admitted to the course until
 another desk is installed. Ninety-five students are taking
 courses in organic chemistry. Only sixty-two
 Urgent Need can be accommodated at the two desks now in
 of Desks the laboratory. We have not been able to assign
 desks to all applicants and many are, therefore,
 taking the lectures without the laboratory work. Although
 thirty-six students registered for physiological chemistry last
 year, and about the same number will take the course in the sec-

semester this year, no laboratory work at all is offered in this important field. And nothing can be done in this direction until another room is given over to the chemistry department. We should have two additional laboratories—one for physiological chemistry, and one for quantitative analysis. In connection with the latter we need a weighing room. In other words, the Department of Chemistry should have the room now occupied by the Department of Bacteriology.

We need help in the Inorganic and Organic Laboratories. The classes are large, and careful supervision of the work is necessary. We were allowed \$200.00 this year for assistance, but it will take approximately that amount to pay the store room keeper, and we will have very little help in the laboratories.

The task of reading note books for 250 students requires many hours of time each week. Most of this could be done by senior students, who would gladly do the work for twenty cents per hour. With the addition of two student assistants to the present teaching force, the work of the department will be efficient and satisfactory.

Dr. C. E. Davis has two courses (two sections in each course) in Inorganic Chemistry, one course in Industrial Chemistry, and one in Qualitative Analysis. Dr. C. W. Porter has four courses in Organic Chemistry, and one in Quantitative Analysis. Dr. J. E. Greaves, of the Department of Bacteriology, offers one course in Physiological Chemistry, and Dr. F. L. West, of the Physics Department, gives one course in Physical Chemistry.

The needs of the Department for the next biennium may be summarized as follows:

Three desks	\$ 1,200.00
Plumbing in qualitative laboratory....	100.00
Floors and shelves in attic store room.	150.00
Pay roll fund:	
For store room keeper \$200 per annum	400.00
For two assistants \$250 per annum..	500.00
Chemicals and equip. \$1,800 per annum	3,600.00
Total	\$ 5,950.00

Respectfully submitted,

C. W. PORTER,

Professor of Chemistry.

DEPARTMENT OF CORRESPONDENCE STUDY.

To the President of the College:

Sir: Following please find my report of the Correspondence-Study Department, as called for in yours of October 6.

There are registered up to the present date, a total of 422 students. This includes those who are registered in Extension Classes. These students come from widely different sections of our own state and some from surrounding states. We have a number in Idaho, one in Kansas, a few in Wyoming, and some in Nevada. Last year we registered
 Registration 415. The subjects offered through Correspondence may be divided into two classes: first, the credit courses; second, the non-credit or reading courses. The credit courses include college, high school, and some grade work; the latter to meet the conditions of a few in outlying communities who have not had the advantage of grade school education.

From present indications a large number of students will register this year, as applications are coming in quite rapidly; the day of making this report I registered eight applicants. We were handicapped for some time in the early part of the year because of the delay caused by the publisher in getting out our circulars; making it impossible to place them in the hands of the teachers over the State at their first institutes, as was planned. Members of the Extension Faculty and others have visited a large number of the institutes held by the teachers in various counties of the State, and called their attention to the work of the department. This procedure, I feel sure, will in time be of great advantage to the department.

Registration to date shows the following in the Credit Courses:

Art	5	Agronomy	4
Accounting a	6	Accounting 1	4
Animal Husbandry 2...	7	Dry-Farming	7
Farm Management	3	Entomology	2
Economics 5a	4	Economics 1	10
Finance & Banking 6...	25	Eugenics	30
English 12	10	English 6	6
English b	2	English 25	5
Foods	2	French 2	8
Geology	15	Geometry-Plane	4

Geometry-Solid	2	Government 1	6
History a	3	American History	7
History b	3	Irrigation & Drainage....	1
Horticulture	2	History 3	12
Political Science	5	Physical Geography	1
Rural Architecture	1	Sociology	25
Soils	3	Stenography	4
Typewriting	4	Wood Work a.....	1

In the Non-credit Courses:

Asparagus Culture	2	Apple Culture	1
Alfalfa	2	Agricultural Bacteriology.	1
Beef Cattle Management	3	Chemistry in Daily Life...	1
Corn Culture	1	Bee Keeping	5
Dry-Farming	18	Dairy Cow Management..	19
Feeding Farm Animals..	2	First Aid for Injured and	
Flower, Garden and Lawn	3	diseased animals	3
Horse Management	2	Hog Management	6
Potato Culture	2	Poultry Management	11
Bacteriology	9	Principles of Cookery....	18
Care and tr. of children.	9	Service of Foods.....	17
Household Management	15	Home Furn. & Decoration.	9
Vegetables Gardening ..	4	Home Sanitation	4
Canning, Pres. & Pickling	5	Home Care of the Sick....	7
Home Construction	6		

Some students have registered for more than one subject.

The following teachers are at the present time doing work either in Extension Classes, or reading papers for Correspondence-Study students:

Dr. George Thomas	Prof. Ogburn
Prof. Arnold	Prof. Brooke
Prof. Fletcher	Instructor Goodspeed
Prof. Pedersen	Instructor Emil Hansen
Prof. Wilkinson	Instructor Thain
Dr. Frederick	Prof. William Peterson
Dr. Saxer	Dr. Titus
Prof. A. J. Hansen	Prof. West
Prof. Agnes Saunders	Prof. P. E. Peterson
Prof. Moen	Prof. Powell

Dr. Greaves
 Prof. Daines
 Prof. Alder
 Prof. Robinson
 Prof. Humpherys

Prof. Huntsman
 Prof. Israelson
 Instructor Howell
 Instructor Casto
 Instructor Bracken

In most cases the regular instructors can read the papers that come to them. In such subjects, however, as Economics and Sociology, probably History a little later, we may need some help in addition to that provided by the regular faculty. The present provision for Sociology, Economics, etc., will, I think, take care of that work for the present year. Our reading courses in Principles of Cookery, Service of Foods and Table Etiquette, Household Management, Canning, Preserving and Pickling, should be placed in the hands of some one who will revise them and adapt them more to the average household in the State. These courses should be stripped of technicalities, and prepared especially for the housekeeper who is not acquainted with technical language. Some one who has a wide acquaintance with State conditions, and who knows pretty thoroughly the average home in our State, should revise our present courses.

As to equipment, about the only furniture or equipment needed in the office will be a table and additional bookcases, and probably a filing cabinet. This will be inexpensive, probably \$50.00 will cover the cost in this line for the next two years. My office room is ample, very nicely situated for the work, and in general quite satisfactory. The work of the department is becoming better organized each year. The teachers read their papers with greater promptness, and in general do more effective work. I would suggest, however, that the President instruct those who are reading papers to be more thorough in reading and grading the lessons. The principal criticism that I have with many teachers is that they are not helpful enough. They grade the paper on the basis of class work, forgetting that in the class they have an opportunity to point out the errors in class discussions, whereas in this work the mere giving of a grade is not sufficient. For example, if a D grade is given, the student should be informed of the

weaknesses in the paper that brought this grade. Many of our readers are doing this.

Prospects look bright for the department, and I feel sure that we shall reach six or seven hundred students before the close of the season.

Respectfully submitted,

JAMES H. LINFORD,

Professor in Charge Correspondence-Study Department.

DEPARTMENT OF DOMESTIC ART.

To the President of the College:

Sir: In compliance with your request of October 6, I present the following report of the Department of Domestic Art.

(a) Number of students enrolled in the department at the present time, 135.

(b) Classes taught:

VOCATIONAL.

Domestic Art c, d

Domestic Art e (not given this year)

COLLEGE.

Domestic Art 1 and 2

Domestic Art 3

Domestic Art 4

Domestic Art 5

Domestic Art 6

Domestic Art 7

Domestic Art 8 Second Term

Domestic Art 9 Second Term

Domestic Art 11 Not given this year

Domestic Art 10 Full time course in Dress Making

(c) Instructors conducting various classes:

Domestic Art c, d Dress Making, 1 Sec., Miss Richardson

Domestic Art 4 Millinery, 2 Sec., Miss Richardson

Domestic Art 6 Advanced Mill. 1 Sec., Miss Richardson

Domestic Art 1 and 2 Art needle work, Miss Moen

Domestic Art 3 Advanced Dress Making 2 Sec., Miss

Moen

Domestic Art 5 Modeling and Designing, Miss Moen
 Domestic Art 9 Survey Course, Miss Moen.
 Domestic Art 7 Textiles, Miss Wilkinson
 Domestic Art 8 Chemistry of Textiles, Dr. Porter
 Domestic Art 10 Full time course in Dress Making, Miss
 Daniels

Relative to the needs of the department for the coming biennium, the present teaching force will probably be ample to do the work satisfactorily. Some assistance in extension teaching, however, will be necessary if that work is to be taken care of by the department.

The equipment of the department is quite complete. Some repair on sewing machines and a few new ones are needed. Old, worn-out machines may be exchanged in part payment for new ones. A hemstitching machine (cost
 Needs \$170.00) could be used to good advantage at the present time. 1½ dozen frames for Domestic Art 1 and 2, (Art needle work) are needed to carry on the work successfully. The approximate cost of equipment needed \$300.00.

The present quarters are satisfactory and adequate for the present needs of the department. As this is my first year at this Institution, the following are mere suggestions bearing upon the work of this department.

A closer relation between the Domestic Art Department and the Department of Fine Arts is desirable. Domestic Art II (Costume History and Design) given by the Art Department, and Domestic Art 5 (Designing and Modeling) should be so arranged as to give students majoring in Domestic Art the benefit of both courses.

Domestic Art 6, (Advanced Millinery) may be eliminated, as the demand for this course at the present time is not great enough to justify giving it.

The vocational Domestic Art c, d, (Dress Making) should be scheduled at a different hour and given three laboratory periods, instead of four, per week, as it is almost impossible for students to get this work on account of conflict with other subjects which they should take.

Respectfully submitted,

JOHANNA MOEN,
 Assistant Professor of Domestic Art.

DEPARTMENT OF ECONOMICS, SOCIOLOGY AND POLITICAL SCIENCE.

To the President of the College:

Sir: I herewith submit a report of the department of Economics, Sociology and Political Science.

The last few years have seen a marked increase in the registration in the social and political science groups. For a time, it was felt that perhaps the increase in numbers was only temporary, but the persistent growth gives strong evidence of permanency. The subjects in the social and political science group, as well as giving practical training, fit directly for citizenship and should be encouraged; at least opportunity should be offered for those who come in the natural course. It would appear from present indications that additional instructors will be required, if Mr. Casto holds to the library permanently.

The following are courses given by the department:

Economics I
Economics II
Economics IV
Economics V
Economics IX
Economics XII
Economics XVI

Correspondence.

Courses:

Economics I
Economics 5-a.

Sociology.

Sociology I
Sociology II
Summer School
Sociology—Correspondence

Political Science.

Political Science I
Political Science II
Political Science 4 and 5

Correspondence.

Government 1

Respectfully submitted,

GEORGE THOMAS,

Professor of Economics.

DEPARTMENT OF ENGLISH.

To the President of the College:

Sir: I submit the following report of the English Department in accord with your request:

We have 446 students enrolled in the department, exclusive of those registered in correspondence study. They are distributed as follows:

N. Alvin Pedersen, teacher,

English 6 (History of English Literature).....	65
English 11 (Modern Drama).....	46
English 12 (American Literature).....	56
English 7 (Sec. 3 Composition).....	43
English 11 (Modern drama, Saturday class for City and County teachers).....	15 225

Vincent Ogburn, teacher.

English C. (High School composition and Classics)	52
English 6, Sec. 2 (History of English Literature) ..	48
English 7, Sec. 2 (Composition).....	25
English 7, Sec. 4 (Composition).....	23 148

D. Earle Robinson, teacher.

English 7 1, (Composition).....	31
English 7 4, (Composition).....	17
English C, (High School Classics and Composition) ..	25 73

This makes a grand total of 446

In addition, it should be noted we shall have a section in winter course English, beginning November 14, which promises to be large. This class will be taught by Professor Ogburn, who will then have a full schedule.

As to the teaching force for the next biennium: If we may have Professor Robinson again for a similar amount of work, nine hours a week, during the next Teaching Force two years, as well as Miss Kyle and Professor Ogburn, we should be adequate to the demand. This year, owing to Professor Kyle's absence, we are a little short on courses, that is, as to diversity. We shall be able to make that good next year, if the above be granted.

We have had to start a class in College Composition, a demand we have never had before. Next year we shall have to run two classes in this work—one for students just entering as was the case this year, and one for those taking New Demands the course now, who will return next year.

Again, year after next, a third course will have to run for those returning the third time for winter work. In a word, our winter courses are attracting and will continue to attract in large numbers in the future, even within the next biennium—students of college grade for whom we must run a series of college courses. There will be at least three college courses running, of necessity, for them within the next two years. These, moreover, allow them no choice. Should there not be one or two courses offered in addition, so that winter course students may have some election of English studies?

The same problem arises in the vocational courses. We should have the courses following English a; that is, English b and c; otherwise, we cannot handle the returning students, as well as meet the needs of students who come for the first time, but who are students of various degrees of advancement scholastically. We have some such this year, who fit nowhere.

It seems then, that the winter course will take the entire time of an instructor, giving him in vocational and college work combined, seventeen or eighteen hours of teaching a week.

I suggest that you take this under advisement with the idea of engaging an extra instructor for that period. That would leave the English Faculty free for their regular work. We need to

Additional
Help

offer a greater variety of courses, and many of our large sections need dividing, especially those in composition.

I hope that for, or during the next biennium, however, the department may have set aside for it, more than \$50.00 a year, as in the past. An instructor in English with 225 students, as in my case, in courses requiring frequent theses must have frequent recourse to the help of a theme reader. The \$50.00 amount is insufficient to allow this, and at the same time cover incidental expenses. The other way out of this difficulty, would be to split the large sections, which would necessitate the employment of an additional instructor. This, I should of course, recommend if it is within our reach. Otherwise, the department needs \$100.00 a year for such help. I am afraid I shall have to ask for a helper in my classes this year. Of that, more later.

We shall need, and need now for that matter, larger appropriations for the buying of library books used by our large English classes. For instance, we have no supplementary material for our section in business English; I have
 Books for 56 students in American Literature, who must
 Library be referred frequently to one set of books in the
 Library; in the History of English Literature,
 we have over a hundred students who tumble over one another to get at four or five books. We must have duplicate books and sets. One hundred dollars a year for library will not meet, and have not met in the past, the situation. Since we do not ask for laboratory equipment, etc., may we not be given a more liberal amount for this work?

We should be enabled not only to buy books directly supplementary to our course, but also to keep up the library in literature of the present, so that the department could guide the students into the best that is being written today. Our allowance ought to be made \$200.00 a year, or this cannot be afforded.

The department is running smoothly. We have students in numbers as you see, and they appear to be happy.

Respectfully submitted,

N. ALVIN PEDERSEN,

Professor of English.

DEPARTMENT OF ELOCUTION AND PUBLIC SPEAKING.

To the President of the College:

Sir: In reply to your request for a report covering the work of the Department of Elocution and Public Speaking, I submit the following data and comment:

The number of students enrolled in the department for the present school year is 90.

Classes taught are as follows:

- Elocution 1 Vocal Expression.
- Elocution 2 Vocal Interpretation.
- Elocution 3 Dramatic Interpretation.
- Elocution 4 Public Speaking.

The classes are all taught by me, as there is no other teacher in the department. If the increase in the enrollment of students is as large in proportion next year as it has been this year, the assistance of an instructor will be required, as one instructor cannot do all the teaching, and in addition produce the two annual College plays, and direct all the dramatic activities of the School. It is my desire to create in the College an active interest in the best modern and contemporary drama, which I believe to be the vehicle of the best thought of the day; and to produce in connection with class work and the dramatic clubs of the College, a number of plays annually. I believe inestimable good would come of such interest and production.

To do this work effectively, more equipment is needed than we now have. A "work-shop" or "experimental laboratory" for dramatic production is needed, where classes and clubs interested in the study of the drama may present, from time to time, plays to the students of the College and to the community. This "laboratory method" of studying the drama has effectively been tried out in many of our colleges and universities; (notably in the University of North Dakota and also in the Agricultural College of North Dakota. See report in the Drama League Monthly for September, 1916, on the work done in these institutions). A modest equip-

ment for doing effective work would be an attic or basement room, with a simple stage and with a seating capacity of about three hundred; and I ask that such an equipment be provided for the next biennium. I should also like the department to have a larger appropriation than the present meager sum of \$20.00, which is entirely inadequate to meet the need for books, magazines, and other equipment needed to carry on the work of the department successfully.

I should like to suggest that at least one course in Oral English be made a requirement in the school, rather than an elective study as it now is. The educated man and woman of today cannot evade "speaking in public" to a greater or less extent. Should he not have some training along the line of greater efficiency in conveying his ideas clearly and effectively in a well chosen, fluent, and carefully enunciated vocabulary?

Respectfully submitted,

SARA HUNTSMAN,

Assistant Professor of Elocution
and Public Speaking.

DEPARTMENT OF FARM MECHANICS.

To the President of the College:

Sir: In reply to your recent request, permit me to submit the following report of the Department of Farm Mechanics. A list of the various courses offered is given below:

Regular Courses.

- Farm Mechanics 1—Farm Machinery.
- Farm Mechanics 2—Farm Motors.
- Farm Mechanics 3—Farm Power.
- Farm Mechanics 4—Farm Appliances.
- Farm Mechanics 5—Advanced Farm Motors.

Short Courses.

- Farm Mechanics (a)—Farm Motors.
- Farm Mechanics (b)—Farm Buildings and Farm Machinery.

The class room work is all conducted by the writer.

Mr. J. M. Woodhouse, and Mr. Glenn Z. Neilsen assist in part of the laboratory work.

The number of students is increasing each year. This means that a great many students will be in the laboratory each afternoon. It is difficult, if not impossible, for one instructor to give the individual help needed in the laboratory. An appropriation of \$250.00 for laboratory assistance would increase materially the efficiency of the work.

Much of the equipment used in our department is loaned from manufacturers and dealers. It is necessary to assemble this machinery for use, and disassemble and crate when returned to the owner. Nearly all of the equipment loaned (amounting to about \$20,000.00) is exchanged each year for new models. This requires a great deal of time that could otherwise be spent for instruction, if adequate laboratory assistance were available.

A number of students register for Winter Course work for several successive years, and apply for work in advance of the first year. They should no doubt be allowed to follow up their work, but with the limited amount of assistance provided in this department, it will be impracticable to meet the demands.

The Farm Mechanics Department is young and has, therefore, accumulated very little of the necessary equipment for teaching the work outlined. Nearly all the money appropriated each year is used for supplies. An extra appropriation of \$200.00 for two or three years would aid materially in purchasing the much needed equipment.

The floor in Room 3 of the Mechanics Arts building is gradually giving away with the stress due to the heavy machinery. The wood floor should be taken out, and replaced with a concrete floor. This improvement would cost about \$200.00.

There seems to be a keen interest with both farmers and the students to become more familiar with the possibilities of farm machinery and farm power. Much more service could be given the State with the proper co-operation of the Extension Division and the Experiment Station. The Utah Agricultural College is one of the very

few state institutions that fail to help the farmer through the divisions named.

Respectfully submitted,

L. R. HUMPHERYS,

Assistant Professor of Farm Mechanics.

DEPARTMENT OF FINANCE AND BANKING.

To the President of the College:

Sir: The following is a report of the Department of Finance and Banking for the biennium ending November 1, 1916.

This department is one of the newest departments in the Institution, having been organized as a department separate from the department of Economics in 1914. The department is still very closely related to that of Economics, since the courses offered are open only to those who have had a general course in Economics. One of the results of creating a department out of the advanced work in Economics is that the registration in the courses in Finance and Banking is necessarily lower than it would be if such prerequisites were not required. The department, however, has shown we believe, a consistent and healthy growth. This year a new course in Industrial Efficiency was started, and the interest manifested is far beyond our expectations. The growing interest in the business side of farming and the recognition of the importance of efficiency methods in business will, we believe, continue to increase the demand for courses dealing with these subjects.

With the change in the administration at the College has also come, we think, a change in the attitude toward business subjects which will undoubtedly stimulate their growth in the future. Another factor which is no doubt going to help the work in the future, is the growing willingness on the part of business men in Logan and other parts of the State, to co-operate with the College in making the work of this department more practical and useful.

I recommend that just as soon as it is possible, a small fund be provided for the purpose of developing agencies which will make this department of the College of more service to the business men of the State. The sum of \$60.00 would be adequate to begin with.

The following is a list of the subjects taught by the department:

- Finance and Banking 1 (Money).
- Finance and Banking 2 (Banking).
- Finance and Banking 3 (Public Finance).
- Finance and Banking 4 (Taxation).
- Finance and Banking 5 (Corporation Finance).
- Finance and Banking 6 (Economic Hist. of the U.S.)
- Finance and Banking 7 (Railroads).
- Finance and Banking 8 (Industrial Efficiency).
- Finance and Banking 9 (Industrial Efficiency).
- Finance and Banking 6 (Extension Course).
- Economics 1.
- Economics 12 (Agricultural Economics).
- Sociology 2 (Rural Sociology).

The reason for including Economics 1, Economics 12, and Sociology 2 in the list is because these courses are given by the department of Finance and Banking. Professor Brooke conducts the class in Finance and Banking 6. The other courses are taught by the writer.

Respectfully submitted,

GEORGE B. HENDRICKS,
Professor of Finance and Banking.

DEPARTMENT OF FOODS AND DIETETICS.

To the President of the College:

Sir: I submit herewith a report of the Department of Foods and Dietetics for the school years, 1914-17.

Courses Offered, with Instructors.

- Foods A—Elementary CookingEliza Jones
- Foods 1a—Elementary NutritionAgnes Saunders
- Foods 2—Food EconomicsEleanor Wilkinson
- Foods 3—Nutrition and Dietetics.....Agnes Saunders
- Foods 4—NutritionDr. W. E. Carroll
- Foods 5—Pathological NutritionAgnes Saunders
- Foods 6—Diets for Children.....Agnes Saunders
- Foods 7—Care & Feeding of Children.Agnes Saunders
- Foods 9—SeminarAgnes Saunders
- Foods 10—Care and Feeding of Infants.Dr. R. O. Porter

Needs of Department.

1. Furnishings.
 - a. Rug for dining room.
 - b. Pictures.
 - c. Table linen.
 - d. Silverware.
 - e. Portable chairs.
 - f. Cold box.
2. Kitchen Equipment.
 - a. Electric range.
 - b. Electric ovens.
 - c. Two coal ranges.
 - d. Efficient wiring for electrical equipment.
3. Museum\$300.00
 - a. Exhibits.
 - b. Show cases.
 - c. Cases for exhibits.
4. Running expenses\$1,200.00
5. Help.
 - a. A person to assist in College courses \$1,000.00
 - b. A person to conduct short practical
courses 800.00

For Expansion.

1. Practice House.
2. Development of Research Work.
3. Institutional Management.

Respectfully submitted,

AGNES SAUNDERS,
Assistant Professor of Foods
and Dietetics.

DEPARTMENT OF GEOLOGY AND ROADS.

To the President of the College:

Sir: Complying with your request of October 6, I submit the following report concerning the department of Geology and Roads.

The following courses are being offered by the department:

Geology 2, Sec. 1.
 Geology 2, Sec. 2.
 Geology 3.
 Geology 4.
 Geology 5.
 Geology 9.
 Geology 7.
 Geology a.
 Roads I.
 Roads II.
 Roads III.
 Roads IV.

I have had no help in the teaching of this department. Student assistance this year is provided to the extent of \$150.00 for the year's work. The department
 Help should have one assistant during the next two years, doing some teaching and assisting in the laboratory. Four hundred dollars per year would probably give the necessary help.

For the work in Geology, additional maps, charts and specimens should be procured for the general work, and much special equipment should be provided for the special
 Equipment work in the Geology of ground water. I would also ask that \$500.00 each year be provided for this work. The work in Roads is without equipment, and if the work is to be effective, the department must be provided with testing apparatus for road materials and demonstration. This should be provided as rapidly as funds will permit. Five hundred dollars should be put into the purchase of road apparatus each year until a laboratory is properly equipped.

The department is much in need of better quarters. The class room used on the second floor is good, except the room has no water, which is very essential to the class work in Geology 5.

The museum material is crowded into a room in the basement, which is poorly lighted and poorly ventilated. This large amount of equipment is of little use with the present arrangement. A new room should
 New Quarters be provided for the proper exhibition of the
 Needed material on hand, and allow room for that which is needed. A class room provided

with water and gas is essential to the proper teaching of certain courses offered in Geology. A class room adjacent to the museum would be the ideal condition.

For road work, we should have a laboratory room provided, as the testing of road materials causes some dirt. The room which is now being used for the geology museum might well be used for a roads laboratory and testing room.

In addition to the teaching, the department will probably do the most service to the State, and to the Institution, in solving the field problems which come up in the actual work in different sections of the State. This, the department is attempting, in co-operating with the Experiment Station, to solve those problems which belong to Geology, and have a bearing on Agriculture.

Respectfully submitted,

WILLIAM PETERSON,

Professor of Geology.

DEPARTMENT OF HISTORY.

To the President of the College:

Sir: I have the honor to submit the following report of the Department of History.

The following courses are being taught by the head of the department:

English History	32
Modern European History.....	16
History of the American West.....	32
History of Civilization.....	11
History of Science	10

Besides the above, the head of the department is conducting courses in correspondence study in History.

History of Art is being taught by Professor Fletcher.

With respect to the work of the department in the future, I would suggest that efforts be made
 Extension to extend the work in so far as possible to
 Work Desirable the people of the State beyond the Campus,
 in the form of personally conducted extension
 courses, and in collecting source material for the study of
 local history.

This work would, of course, be developed gradually, and any addition to the teaching force for the department, would depend on the rapidity of the development. The head of the department would need to be relieved of some of the work done at present to enable him to do any additional work in such lines.

I would further recommend that the course in History of Art be taken out of the Department of History another year.

Respectfully submitted,

F. D. DAINES,

Professor of History.

DEPARTMENT OF HOME CONSTRUCTION AND SANITATION.

To the President of the College:

Sir: I have the honor to submit the report of the Department of Home Construction and Sanitation.

The following courses are offered in this Department:

H. C. & S. 1 (Sanitation).....	Eleanor Wilkinson
H. C. & S. 2 (Home care of the sick).....	Eleanor Wilkinson
H. C. & S. 3 (Home Construction).....	Eleanor Wilkinson
H. C. & S. 4 (Household Administration).....	Eleanor Wilkinson
H. C. & S. 6 (Survey).....	Eleanor Wilkinson
H. C. & S. 7.....	Dr. R. O. Potter

Courses to be offered the second term are: Home Care of the Sick, House Construction, Household Administration, and Survey.

High School work having been eliminated from this department, the work now offered is of College grade. As to the future needs of this, and other departments in the School of Home Economics, I would suggest the following:

1. Space for a museum—utilize space in present building.

Exhibits	\$500.00
Cases	200.00

2. Building facilities, equipment, and help for carrying on the study of household problems, (research), and the publishing of such findings.

Respectfully submitted,

ELEANOR WILKINSON,

Professor of Home Construction and Sanitation.

DEPARTMENT OF HORTICULTURE.

To the President of the College:

Sir: Your letter of October sixth is at hand. In reply I am giving the information you desired.

The classes taught in the Horticultural Department are as follows:

Horticulture 1 (General Pomology)

Horticulture 3a (Plant Propagation and Green house Management)

Horticulture 9 (Horticultural Seminar)

All of the classes are being taught by me with the exception of one laboratory which is being handled to good advantage by Mr. Emil Hansen.

The enrollment is small, and shows a decrease from that of last year. This is due to three factors: First, the same subject which we are teaching as Horticulture 1, is being taught in the high schools at present. This course used to be our big class, but has been gradually getting smaller. Most students who come here have already had it in high school. Second, owing to market and weather conditions, horticulture has had a general slump. Third, the lack of a head of the department due to the resignation of Professor E. P. Taylor.

The teaching force during the next biennium for conducting the work of the department, will probably consist of a head of the department and one assistant. There will be other assistance necessary in the form of student help from time to time to carry on experimental work.

Fifty dollars' worth of new equipment will most likely cover all that is necessary. This, according to the present plan will consist of a rack for horticultural magazines and mountings for illustrative matter.

The rooms for teaching laboratory work, and office space for which the department is using, are perfectly satisfactory, with the exception of a lack of light in the main office. This can, and should be remedied by putting in a glass partition between the laboratory and office, rather than the brick wall that is now there. The room is now very dark, and hard to work in, but by putting in this glass partition, it could be made the best of offices.

In making suggestions bearing upon the work of the department, I should like to suggest that it would be advisable to

wait for any changes in the courses until we have a permanent head of the department. I think there are plenty of changes and additions to be made, however. In regard to the correspondence work connected with the department, I think there could be much improvement. At present, the correspondence courses given in Horticulture, consist only in assignments, and questions based on one book for each course. It would be much better if we could give them outside work from other publications and multigraph copies of work corresponding to that given as lectures in the classroom. I am intending this winter to revise this work, if it meets with the approval of Dr. Linford.

Respectfully submitted,

W. E. GOODSPEED,

Acting Horticulturist.

DEPARTMENT OF IRRIGATION AND DRAINAGE.

To the President of the College:

Sir: I submit herewith a report of the Department of Irrigation and Drainage for the present biennium and an outline of the needs of the Department during the coming two years.

The courses taught and the instructors are as follows:

- Irrigation and Drainage 1.....O. W. Israelson
(Elementary Irrigation and Drainage)
- Irrigation and Drainage 2.....O. W. Israelson, 2nd Term
(Irrigation Practice)
- Irrigation and Drainage 3.....O. W. Israelson
(Farm Drainage)
- Irrigation and Drainage 4.....O. W. Israelson, 2nd Term
(Irrigation Systems)
- Irrigation and Drainage 5.....O. W. Israelson, 2nd Term
(Irrigation Management)
- Irrigation and Drainage 6.....O. W. Israelson
(Irrigation Institutions)
- Irrigation and Drainage 7.....O. W. Israelson, 2nd Term
(Hydraulics)
- Irrigation and Drainage 8.....O. W. Israelson
(Rainfall and River Flow of the World)
- Irrigation and Drainage 9.....Prof. R. B. West
(Irrigation Designs)

Until the beginning of the present semester, all of the irrigation and drainage courses, with the exception of Course 2, have been given by R. B. West, Professor of Agricultural Engineering, Course 2 has been given by F. S. Harris, Professor of Agronomy, and George Stewart, Instructor in Agronomy. Courses 1, 2, and 6 are now being given by the writer who was placed in charge of the irrigation and drainage work July 1, 1916, and course 9 is being given by Professor R. B. West.

It is believed that some readjustment of courses is necessary to best meet present needs. Course 1, for example, which is essentially a high school course, is no longer demanded. The detail of the recommendations of readjustments considered necessary will be submitted at a later date.

In addition to the work above outlined this department is giving courses in Agronomy as follows:

Agronomy 5

(Soil Management)

Agronomy 7

(Comparative Soils)

The seminar in Agronomy, Course 12, is also directed in part by this department.

It is the aim of the department to stimulate and properly guide irrigation advancement in Utah. Data now at hand is sufficient to warrant recommendation of some changes in irrigation methods, but upon many questions—particularly in management of irrigation systems and distribution of the State's water supply—accurate information is very meager. Investigation of these problems is urgently needed, and must be provided for.

In order that the department may conduct some experimental work along these and other lines, and also properly develop resident instruction it feels bound to urge that it be relieved of the responsibility of giving instruction in agronomy. Provision should also be made for a laboratory assistant, on half time beginning September, 1917, at a salary of about \$350.00. It is believed the demand for instruction will increase to such an extent that the employment of an instructor in irrigation and drainage will be a necessity not later than July 1, 1918.

The greatest irrigation need of the State, at present, is the providing of an efficient system of adjudicating water

rights and of supervising the distribution of water. Under such system the duty of water would undoubtedly be rapidly increased. To secure the enactment and enforcement of a law which will best meet the needs of Utah irrigators, a State-wide educational campaign in irrigation must be made.

This department feels that it should lead in the educational work necessary to secure and enforce better irrigation legislation in Utah, and to do this the teaching force as above outlined will no doubt be demanded.

The efficiency attained in giving instruction in most of the irrigation and drainage courses is determined in large measure by the laboratory facilities at hand. Professor
 Laboratory R. B. West, has felt very keenly the need of a
 Equipment field laboratory for water measurement during
 the last two years and the plan submitted below
 was made in consultation with Professor West and has his
 approval and support. Briefly, this plan is as follows:

To install a field laboratory for demonstrational and instructional purposes, which should consist of two reservoirs, standard water-measuring, and water dividing devices, and constant-flow control devices now in use in this and other countries.

The College should contribute not less than two thousand dollars (\$2,000.00) toward the installation of a field water measurement laboratory as above proposed. With this amount to begin with, some assistance may be obtained from the State Engineer's Office and some from the Office of Public Roads and Rural Engineering, U. S. Department of Agriculture.

It is believed that such a laboratory should be placed near the Mechanic Arts building. The plan of installation to be suggested makes it necessary to have a difference of elevation between two reservoirs amounting to about twelve feet. In view of this fact the small tract of land lying a little south and west of the Mechanic Arts building and east of Mr.
 Location Blumel's orchard is an ideal place for the proposed laboratory. This location would make it convenient to fill the intake reservoir from the canal water during the regular irrigation season, and would also make it possible to connect the reservoir to the City water main at a very low cost. It will obviously be necessary to have some source of water supply during the non-irrigation season, and consequently convenience to the City water main, is a factor which

must be given attention. The lower, or outlet reservoir must also be connected to a convenient discharge conduit, and the location proposed would make it possible to connect this reservoir very cheaply to the City sewer system.

The reservoirs above mentioned should have a capacity of about one-half acre-foot each. It is necessary to have the reservoirs in order to get a large variation in the size of stream to be measured. The upper one, that is the intake reservoir, may be filled from the canal, or from the City water main supply, using a very small stream, but requiring a proportionately long time to fill the reservoir. The City water main carries about four cubic feet per second and if one-eighth of this amount were diverted into the reservoir it would fill it in a period of about twelve hours, or one-fourth of the amount would fill it in about six hours. The lower or discharge reservoir should serve as a medium between the water measuring devices and the sewer system or other discharge conduit. It would frequently be necessary to use a stream amounting to about five or six cubic feet per second through the measuring devices, and a discharge conduit from the lower reservoir of one-half cubic foot per second would be adequate.

It is probably unnecessary to outline in detail at this time, all of the devices which it is proposed to install. Suffice it to say that different physical conditions through the state demand the use of different water measuring devices, and hence the standard instruments, as well as the new ones best suited to various conditions should be included in the proposed laboratory. The field laboratory at Davis, California, described in California Agricultural Experiment Station Bulletin number 247, a copy of which accompanies this letter, is typical in general of the laboratory which it is believed this Institution should install. Experience at Davis giving instruction in water measurement both before and after the installation of the Davis Laboratory, forces me to urge the installation of water measuring devices here at the earliest possible date.

At this time insufficient data are at hand to accurately outline the cost of the laboratory proposed. About \$2,500 was expended by the co-operating public agencies in the installation of the Davis Laboratory, above mentioned. However, many

of the devices, which are manufactured and sold on a commercial basis, were installed at the expense of the corporation interested in them, simply as a means of advertising their products. It is very probable that a similar scheme could be well carried out here. Cost The College should, without doubt, contribute not less than \$2,000 during the next biennium towards the installation of the proposed laboratory.

With \$2,000 to begin the work with, some assistance could, in all probability be had from the State Engineer's Office and some from the Office of Public Roads and Rural Engineering, United States Department of Agriculture. In Co-operation case the College considered it desirable the res- Possible ervois proposed might well be used by the inhabitants of Logan City as an out-door swimming pool during the summer months. If so, it is likely that some assistance could be easily obtained from the City Officials, particularly with respect to the labor involved in connection with the installation of the reservoirs.

I shall be very much favored by your giving this matter earnest consideration and trust that you will permit me to attempt to answer any inquiries which you may have concerning it.

The College now owns but three surveyors' levels, a number which is inadequate to supply the needs of the departments of agricultural engineering, and irrigation and drainage. It is, therefore, urged that six additional levels at a cost of \$40.00 each, be provided for the use of the two departments named above.

The office now occupied is not conveniently located with respect to the work of the department. In consultation with Professor R. B. West, it has been decided desirable to convert the west two-thirds of room 21, Mechanic Arts Office Room building, into an office for this department, and Equipment \$150.00 is needed for the purchase of office equipment and furnishings, including particularly a desk, table, and some chairs.

The work of the department of Irrigation and Drainage, particularly in its Experiment Station activities, demands a large amount of correspondence and Equipment for Stenographic Assistance clerical work. It is, therefore, urged that a dictaphone be installed in the Mechanic Arts building, near the proposed Irrigation and Drainage

office, and also near the office of the department of Agricultural Engineering.

Convenient access to a telephone is considered an absolute necessity, consequently it is urged that a telephone be installed on the second floor of the Mechanic Arts Building near the proposed department office.

With reference to the College as a whole, it is believed that very great saving in time may be economically obtained by extending telephone service. It is understood that this matter has been given some attention, and it is hoped that a satisfactory plan for placing telephones in most of the offices of the Institution may be reached at an early date.

The outlook for the work in irrigation and drainage is bright indeed. Utah men who spend practically all of their time in the study of irrigation problems, and also practical irrigators, are agreed that a large proportion of the land in the State is over-irrigated. This condition is due, in large measure, to lack of knowledge on the part of irrigators concerning methods which will make possible more economic use of water, and of relations of water to soil. Many of the present contests of water appropriation, made at large expense to the State, would never arise if the contestants correctly understood the elements of irrigation insitutions and of water measurement. Likewise much of the needless expensive litigation now plunged into would never be initiated, if the litigants were better acquainted with irrigation principles.

This department's aim is to make it possible for every irrigator of the State to obtain a correct understanding of elementary irrigation and drainage principles. It hopes to accomplish this end first, by giving one fundamental course in irrigation to agricultural students; second, by training specialists who will, after leaving College, work among the irrigators of Utah and instruct them; third, by giving short course resident instruction to practical irrigators and men engaged in the management of irrigation enterprises; and fourth, by reaching in the field, all of the irrigators possible under the direction of the Extension Division.

Respectfully submitted,

O. W. ISRAELSON,
Ass't. Professor of Irrigation and Drainage.

DEPARTMENT OF MATHEMATICS.

To the President of the College:

Sir: I herewith submit my report for the Department of Mathematics for the present school year.

COURSES OFFERED.

Mathematics a (Vocational Algebra)
 Mathematics b (Plane Geometry)
 Mathematics 3 (Agricultural Math.)
 Mathematics 5 (College Algebra)
 Mathematics 7 (Calculus)
 Mathematics 8 (Differential Equations)
 Mathematics 10 (Descriptive Astronomy)

The head of the department conducts all classes except Math. b, which is in charge of Assistant Professor Humpherys.

The present teaching force is adequate to conduct the work of the department for the next two years, unless a class in Winter Course Mathematics should develop, in which case an assistant should be provided to handle this course.

The usual annual appropriation of \$25.00 will cover the cost of all necessary supplies and equipment.

Respectfully submitted,

A. H. SAXER,
 Professor of Mathematics.

MECHANIC ARTS.

Department of Forging.

To the President of the College:

Sir: In answer to your request, I have pleasure in submitting the following report:

The following are the courses taught in this department:

Forging a
 Forging b
 Forging c
 Forging d

Forging	1
Forging	2
Forging	3
Forging	4
Forging	5
Forging	6
T. M. A.	1
T. M. A.	6

The above classes were taught by the head of the department with student help in the afternoon during the Winter Courses. In addition, Mr. William Thornley of Smithfield was hired each year during the Winter Courses to give eight lessons of one afternoon each in horseshoeing. Mr. C. A. Hansen of Logan was also hired to do molding in the Foundry. The Foundry was "run" four times each year. The castings made were used by the College. The Foundry is self-supporting and in addition has proved a great help to other departments.

By this arrangement of help, the teaching force was kept to a minimum; help was provided when most needed. The students received instruction in horseshoeing; and they were also given an opportunity to see how castings are molded and cast. Much more efficient work might be done in the Winter Courses if a full time assistant who is prepared to teach horseshoeing and help in general blacksmithing could be hired during this time. More than fifty per cent of the students attend only during the Winter Courses. This is an important part of our work, and I hope that something can be done to give me efficient help during this period.

Our equipment is in fair condition. We have spent a little each year for equipment from the regular appropriation. The allowance for 1916-17 was reduced, however, until it is only enough for bare existence. If we are to grow and keep up-to-date, this should be increased rather than reduced. Last year an oxy-acetylene welding apparatus was added to our equipment. This will be an additional expense. It will mean purchasing gas if students are given lessons in this work. It will, however, be of service to other departments, but I suppose that the Forging Department will have to purchase the gas.

One of the pressing needs of the Mechanic Arts Building

is a dressing room properly equipped with lockers, washing facilities, and toilets. This is a long felt want.

The shops are serving to a more or less extent two classes of students, viz., those that need shop work as an aid to their vocation, and those that desire the work as a vocation. The shop work should be outlined and correlated to meet these two demands. We should have courses especially outlined for the farm students and those who need only a little work, and some good thorough courses for those who wish to become mechanics. We have done this in the past to some extent, but it is my opinion that an improvement can be made.

Closer correlation between the Farm Mechanics Department and the Forging Department would be an improvement. Forging is an excellent preparatory subject for Farm Mechanic students.

Respectfully submitted,

AARON NEWBY,
Assistant Professor of Forging.

DEPARTMENT OF MACHINE WORK.

(Including Mechanical Drawing and Automobile Work)

To the President of the College:

Sir: Complying with your request I herewith submit a report of this department for the past two years, with the requirements for the coming biennium.

The work of the department has been gratifying. It has materially increased in scope, responsibility, and service to the people. The introduction of the work pertaining to automobiles assisted in making the advance.

The demand for mechanics of ability is constantly growing. This is perfectly natural, expected, and understood by those acquainted with conditions in these Western States, Utah especially; for its people are passing from the first-hand processes of obtaining a livelihood into the business, industrial and manufacturing lines as the population increases. Then, too, the demand for mechanical information, skill and ability, is increasing as more and more of man's work is being done,—yes, and pleasure given, by machinery and mechanical

Promise of
Growth

contrivances of numerous kinds. The advent of the automobile with its manipulation, care, and repair requirements, gives just a glimpse of what may be expected in the future. It is said

Utah has various undeveloped resources and wonderful industrial and manufacturing prospects. So I feel that this department is coming into its own, and that it can be made to effectively serve the people of the State by proper attention to future needs. Much information concerning tools, machines, and operations can be obtained, and considerable skill and ability acquired in this part of the College.

The work of the machine shop has been changed to meet new conditions that arose, as far as the nature of the work and the equipment allowed. The annual allowance of two to three hundred dollars was enough to nicely supply material, small tools, etc., but did not admit of much equipment.

The introduction of automobile repair work, two years ago, lent a stimulus to the shop work, and has served its purpose fairly well. In that time three cars have been overhauled, and the large College car has been partly cared for by the department. Last winter it was necessary to open the machine shop in the forenoons (the first time in its history) to accommodate students wishing the work.

An effort has been made to get more information before the students. Accordingly, some books were purchased by the department for their use. At present, class work in most of the shop courses, is being conducted once a week in connection with the laboratory work.

The mechanical drawing classes have done good average work. Last year, during the Winter Course period, the work was mainly turned over to an assistant; as my time was required in the machine shop at drawing class

Mechanical
Drawing

hours. At the beginning of the present year a new text for first year drawing was introduced.

The text gives a fuller discussion of elementary work than the old one. It is expected this will better fit students for the advanced courses.

The course in Automobiles (Technology of Mechanic Arts 3) which was started two years ago, proved to meet the requirements of a comparatively large number of students. Last

Automobile Course winter a first attempt was made in giving a half-dozen lectures to Round-Up classes. This surpassed expectations and indicates that the work is in demand. This year's class is already as large as can be successfully handled in one section.

The following is a list of the courses offered in this department:

- Machine Work 1 and 2, Hand tools and simpler machines.
- Machine Work 3 and 4, Lathe and Milling Machine Work.
- Machine Work 5 and 6, Auto repair.
- Machine Work C, Short course.
- Machine Work D, Ad. short course.
- Machine Work 1, Winter course.
- Machine Work 2, Winter Course.
- Machine Work 3, Winter Course.
- Machine Work 4, Winter course.
- Mechanical Drawing a and b, Pen exercises, geometry, lettering.
- Mechanical Drawing 1 and 2, Orthographic projection.
- Mechanical Drawing 3, One plane projection.
- Mechanical Drawing 5, Architectural drawing and perspective.
- Mechanical Drawing 6, Machine Drawing.
- Mechanical Drawing 9 and 10, Descriptive Geometry.
- Mechanical Drawing a, Winter course.
- Mechanical Drawing 3, Winter course.
- Mechanical Drawing 2, Summer School.
- Mechanical Drawing b and 1, Summer School.
- Tech. of Mechanic Arts 3, automobiles.
- Tech. of Mechanic Arts 3. automobiles Winter Course.

All instruction in this work has been given by the head of the department; excepting that given by Mr. Perry Van Leuven, to the drawing classes during the Winter course period last winter.

The work in this department covers quite a range in nature and number of courses given. This is evident from the foregoing table. Also, much of the work demands considerable preparation by the instructor; as keeping equipment, tools,

etc., in working condition; drawings, stock and apparatus have to be prepared for class use. Then the number of students have increased to a point where one person cannot adequately serve them in this kind of work.

There are now more students than last year by this time. One regular assistant, it is thought, will suffice for the two coming years. If not needed full time to assist with students, his time can be well spent in making drawings, for new work, patterns, etc., which will increase the efficiency of the department. I should judge a suitable assistant may be had for about \$1,000 for the biennium.

The machine shop is pretty well equipped with machines and small tools for general work. It also contains some special equipment suitable for automobile repairing. However, if automobile repair work is to be given in a substantial manner approaching regular practice, the following special equipment will be needed:

An air compressor, rectifier, chain block, cylinder grinder, some standard engine auxiliaries, representative accessories; also some more motor cars for driving practice, laboratory and repair work. Used cars will answer.

The small equipment and apparatus will cost approxi-

mately	\$200.00
Cars suitable for the purposes, about.....	500.00
Annual allowance as in the past for materials, perish-	
able supplies and tools \$200.00 to \$250.00..	450.00

The most urgent need for successful automobile repair work is more room, designed for the work. The present shop is full of machinery, the door is too small for automobiles, thus making it very awkward to handle but one car while undergoing repair. We need space where a few cars can be handled while being repaired, and provide small rooms where the vulcanizer can be placed for tire work; where work on ignition, starting and lighting apparatus can be done; and where repair parts, materials and the like can be stored.

The drawing room can be improved and provide a needed class room by having two partitions put in it. Approximate cost \$130.00.

Summary of requirements:

Help for the biennium.....	\$1,000.00	
Apparatus and small equipment.....	200.00	
Used Cars	500.00	
Allowance for materials, supplies and so forth	450.00	
Improvements in present quarters.....	130.00	
Total		\$4,900.00

Besides the above additional room for auto work is urgently needed as explained.

Respectfully submitted,

E. P. PULLEY,

Ass't. Prof. of Mechanic Arts.

DEPARTMENT OF WOODWORK.

To the President of the College:

Sir: I am pleased to report that the Department of Woodwork is in a healthy condition and growing.

The following is a list of the courses offered in this Department:

Carpentry a.....	A. J. Hansen
Carpentry b.....	A. J. Hansen
Carpentry c.....	A. J. Hansen
Carpentry d.....	A. J. Hansen
Carpentry I.....	D. A. Swenson
Carpentry II.....	D. A. Swenson
Carpentry III.....	D. A. Swenson
Carpentry V.....	D. A. Swenson
Carpentry VI.....	D. A. Swenson
Carpentry X.....	David Hughes

The advanced work has increased rapidly with us in the past two years; and from the present indications it has not yet reached its limit by any means. Advanced work means individual work, and during the winter courses, with

More Help
Required over 100 students daily, it is impossible for the present force of instructors to do the required work efficiently. Another phase of our work is also increasing—that of visiting the high schools in compliance with requests which frequently come in from the teachers of woodwork. These visits should not be slighted since they mean much to the College.

Besides teaching, the keeping of machinery and tools in repair takes a good deal of time, and in order to do efficient work, we need adequate help. Therefore, I suggest that another assistant be employed for next year.

The department is very much in need of a new mortising machine, the old machine being worn out and unsafe for students to operate.

The want of a tenoning machine has long been felt. Such a machine is indispensable for expeditious work, and the students should be made familiar with the operating of such a machine.

New
Equipment A shield is needed for the band saw, to safeguard those who operate the saw, or those who pass by it when it is in motion. A machine for setting the band-saw blades is also badly needed.

An electric glue pot with water jacket would save a great amount of glue and make the work in glueing much more efficient.

Repair Our electric motor has long been failing, and is now in a condition where a total breakdown is momentarily expected. A new motor, or a thorough overhauling and rewinding of the one now in use is required.

Most of our clamps went through the fire of 1905, and are now entirely out of commission; the wood clamps, later acquired are for the most part broken, and a new supply of wood and steel clamps is needed.

Several special tools are required to complete our equipment. Not a dollar has been spent during the last nine years to equip this department; therefore, a generous replenishment of tools, etc., is necessary.

Additional floor space is needed by this Department

Additional Room because of the advanced nature of work now given by the school. We are sorely in need of a room for finishing, as we have no place at all where this phase of our work can be done efficiently.

One of the greatest drawbacks to the department is the unseasoned condition of the lumber we are forced to use, due to the lack of heat in the stock room. Ample heating equipment in this part of the building is urgently requested.

If our supplies, such as lumber, hardware, etc., could be purchased in larger quantities than heretofore, it would mean a reduction in price; greater and better varieties might also be secured.

Our most conservative estimate of money needed for supplies for the next biennium is \$2,500.00.

Respectfully submitted,

A. J. HANSEN,
Assistant Professor of Mechanic Arts.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS.

To the President of the College:

Sir: In compliance with your request, I have the honor to submit herewith a report of the work being done in this department:

Number of students enrolled in the department at the present date is 270. Four classes are taught. Total enrollment of the four classes is approximately 240. All of the instruction in these classes is done by the commandment, and, of course, includes infantry drill and regulations; and manual of interior guard duty. This course will be supplemented by a lecture from time to time on military tactics. It is my intention also to deliver one or two lectures of about thirty minutes' duration on the subject of personal hygiene, and venereal disease.

In view of the recent legislation enacted by Congress,

the College is entitled to the services of an enlisted man as an assistant to the head of the department. In case our finances permit, application should be made at once for this man, and he should be paid a salary of \$30.00 per month.

The Military Department is in need of some new equipment, in the nature of office fixtures, sabres, etc. This equipment, with the ordinary calls upon the department,

Equipment could be met by an allotment of \$400.00 for the next school year. The crying need of the

Department is an armory. This should be a separate building, especially built for the purpose, and in conformity with plans already tried out at other institutions and found successful. With the contemplated increase

Armory for next year, the department should have about twice the space it now has. One large room the size of the present armory, or two rooms half that size would be sufficient.

A continuation of the loyal support of the Administration is the most important matter to this department. A development of the spirit and habit of wearing a uniform on the part of the students, will also materially assist. In this connection, attention is again invited to the circulars relating to the training for the Officers Reserve Corps, which was placed on your desk.

Respectfully submitted,

E. SANTSCHI, JR.,
Professor of Military
Science and Tactics.

DEPARTMENT OF MODERN LANGUAGES.

To the President of the College:

Sir: During the biennium 1915-17, the following courses have been given in the Department of Modern Languages:

German I.

German II.

German III.

French I.

French II.

French III.
 Spanish I.
 English 25.
 Scientific Vocabulary.
 Summer School.
 Extension.
 Correspondence.

The number of hours of teaching given per week in 1915-16 was 22, and in 1916-17 was 24.

The most encouraging features have been the increase in the registration of Spanish students and the establishment of a German Club, with attendance varying from 14 to 32.

Besides his regular work, the instructor in charge has given a course in Journalism, has had charge of the College publicity, and is now in charge of the Community Service Bureau of the Extension Department, and has also made many contributions to the State and outside publications.

Respectfully submitted,

FRANK R. ARNOLD,
 Professor of Modern Languages.

DEPARTMENT OF MUSIC.

VOCAL, PIANO, CHOIR, SOLFEGGIO AND EAR TRAINING.

To the President of the College:

Sir: In answer to your letter of October 6th, I submit the following.

Courses offered in this Department:

Choir.

Glee Club.

Private Vocal.

Private Piano.

Piano Ensemble.

Music I.

New students are coming in every week, and teachers and students alike acclaim more enthusiasm in the music department than they have exhibited for years. The Glee

Club promises to be a splendid factor in helping advertise our College. The U. A. C. Woman's Club has organized a ladies' chorus, which will greatly add to the growing spirit of good music.

The choir is now working on a religious cantata, "The Crucifixion," which it will present sometime during the year. We are also organizing the U. A. C. Music Society, which will give one opera and one oratorio each year. These will cost about \$300.00 per year.

Although a new member of the music faculty here, I am pleased with the splendid outlook musically.

When the time arrives to build a new Chapel, consideration should be given the music department, as to class rooms and practice rooms.

We need a new reed organ this year. This will cost about \$250.00. The amount at present available for the maintenance of the music department is not adequate to maintain the standard of efficiency desired.

Respectfully submitted,

C. R. JOHNSON,

In Charge of Choir, Vocal, Piano,
Glee Club, Solfeggio and Ear
Training.

ORCHESTRA, CONDUCTING, VIOLIN AND THEORY.

To the President of the College:

Sir: Herewith submitted is the report of the music in my charge.

Courses:

Orchestra.

Musical Appreciation, Section I.

Musical Appreciation, Section II.

Theory.

Instrumentation.

Miscellaneous.

We need additional room to carry on the work effectively, especially rooms for practice purposes, away from our class rooms. If, in the future, there is erected a building for Chapel purposes, we hope the Music Department will be installed in the building with proper accommodations for class work, and that same will be built acoustically correct.

Our department is constantly growing, especially in Appreciation of Music. This year it has increased more than 60% over last year's enrollment.

All dance playing is done by students of the Orchestra.

Our allowance for the Music Department ought to be substantially increased.

Respectfully submitted,

WM. SPICKER,

In Charge Orchestra, Conducting,
Appreciation, Violin and Theory.

DEPARTMENT OF PHYSICAL EDUCATION FOR MEN.

To the President of the College:

Sir: In compliance with your request, I am giving you, as far as I am able to ascertain, the information you requested in your note of October 6.

Students enrolled in department, 91.

One class in physical education is given, besides the work in athletics for which credit is given.

Dr. R. O. Porter is assisting by giving six practical lectures on the "Care of the Body," to all students registered in physical education.

To most efficiently handle the work in athletics and take care of the regular scheduled class work, an assistant is necessary.

With the fine gymnasium which we have, it would be advisable to purchase suitable athletic equipment for athletic exercises. I suggest a pair of parallel bars, a vaulting horse, and a half dozen pairs of lifting weights.

I suggest that some special provision be made for a faculty dressing room; one which is separate from the

students' dressing room. I can at the present time offer no suggestions as to the place and location of such a room, but I am sure a suitable place can be found in the gymnasium.

With additional help, we will be able to handle gymnasium classes a great deal more efficiently, and we can plan to take care of more men. Since this is a college made up largely of men from the rural communities who are accustomed to hard work before coming to school, and because of the tendency to neglect daily exercise, I believe a certain amount of compulsory exercise is essential to the student's welfare. I would recommend that physical education be made compulsory to all freshmen who are physically able to take it.

Respectfully submitted,

J. W. WATSON,
In Charge of Physical
Education for Men.

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN.

To the President of the College:

Sir: In reply to your letter of October 6, I herewith submit the following:

Physical Education II, Section 1.....	G. B. Johnson
Physical Education II, Section 2.....	G. B. Johnson
Physical Education 13	G. B. Johnson
Physical Education 14	G. B. Johnson
Physical Education 15a	G. B. Johnson
Physical Education 16	Gladys Smith

A class in social dancing meets once a week; also a class of down-town people which meets for two hours twice a week.

I shall be able to do the work myself if Miss Smith continues to give swimming lessons one hour every day, and one hour two evenings a week, and a student attendant is in the locker room six hours a week.

Repair of Present Equipment 1. Hot water taps are not tight.
 2. The spray in the shower baths is too high for girls. It wets their hair. At least three feet of piping should be cut out of each shower. This is very important, as I hope to be able to require a shower of every girl after every class.

3. The bath tub should be connected with the water supply. Many of our girls do not have the use of the bath at their boarding houses.

New Equipment 1. Two hampers for soiled towels.
 2. Two waste paper baskets.
 3. Keys for Lockers. These were ordered before, but have never been delivered.

4. Two keys for Victor Sanitary Napkin Machine. Inter-National Contract Vending Company, New York.

5. Five adjustable traveling rings at \$10 each, \$50.00

6. Vaulting Buck 85.00

7. Adjustable Ladders 60.00

8. Swimming Boom 80.00

9. Ten sections of Stall Bars at \$8.00 each.... 80.00

Of course, I do not expect to get all this apparatus this year, but these are, in my opinion, the important things in a woman's gymnasium, and probably we can get a piece or two yearly.

Respectfully submitted,

GEORGIA B. JOHNSON,

In Charge of Physical
 Education for Women.

DEPARTMENT OF PHYSICS.

To the President of the College:

Sir: I have the honor to submit herewith the report of the department of Physics.

The following is a list of the courses offered in this department:

Physics 1, Elementary Physics.

Physics 2, General College Physics.

Physics 3, Mechanics, Heat and Engines.

Physics 4, Applied Electricity.

Courses	Physics 5, Physical Chemistry.
	Physics 6, Meteorology.
	Physics 7, Advanced Laboratory Work.
	Physics 8, Mathematical Physics.
	Physics 9, Electricity and Magnetism.

The department is now located on the first floor of the new chemistry building. It is needless to say that this change has greatly increased the efficiency of the work, through providing more room with better facilities for carrying on the work. The appropriation for this department, (not including Farm Mechanics) should not be less than \$700.00 for the coming year, to insure satisfactory laboratory instruction.

The department is carrying on research work to determine (1) on the best site for an orchard, to avoid injury from frost, (2) the temperature that buds of different kinds, and at different stages of development can stand without injury from freezing, and the best way to heat an orchard, together with the temperature rise that may be expected by such heating. Last year, bulletin 141 of the Experiment Station, on the "Topography of a Mountain Valley, and Minimum Temperature in its Relation to Fruit Growing," was published by the department. Mr. Edlef Edlesen is assisting in this work, and also in the laboratory work in physics, his salary being paid by the station and the college jointly. The writer receives no compensation from the station.

In addition to this research work, and the instructional work above mentioned, the department is serving the Institution as Head of the School of General Science, Chairman of the Athletic Committee, and Chairman of the Schedule Committee.

The registration has increased in numbers and improved in quality, better equipment and quarters have been provided, and better instruction given than at any previous time. The outlook, therefore, for the department is very bright.

Respectfully submitted,
FRANKLIN L. WEST,
Professor of Physics.

REPORT OF THE DEPARTMENT OF PHYSIOLOGY AND MEDICAL SUPERVISION.

To the President of the College:

Sir: I hereby submit for your consideration a brief report of the work that has been accomplished in my department, also a statement of the scope and possibilities for further development, and an estimate of the needs of the department for the coming biennium.

In view of the fact that the department was created but three months ago, the results are to me most gratifying and fully warrant, I believe, the prediction and hope that as time goes on, we will reach out to include every student of the Institution; as well as those in correspondence and extension schools, in some phase of the great problem of Public Health. The average mind seems to be in a receptive mood at the present time for suggestions pertaining both to the health of the individual and society, and it seems to me an opportune time to push the work just as far and as fast as is consistent and appropriate.

The work in Physiology consists of one standard College Course extending throughout the year. There are about 50 students registered for this work. I do not see the possibility of developing this work a great deal until a more or less complete physiological laboratory is provided, and I earnestly hope that it might be practical in the near future to equip such a laboratory. Until a laboratory course can be offered, I think the work can be made much more interesting and instructive, if enough equipment is provided for class room demonstrations, and I therefore ask for sufficient appropriation to secure this equipment.

In the department of Medical Supervision I am somewhat handicapped this year because of insufficient funds. A brief tabulation of what has been done thus far will amply explain the nature, scope and import of the work of the department.

Every student doing work in the gymnasium has had

a complete physical examination, and a careful record has been kept of the findings. In all cases of mal-development or physical deformity, especially those cases due to habit of posture, occupation, etc., suggestions for correction of the habits are made and corrective gymnastics are being given to comply to the needs of the individual case. A great deal might be expected in the future from this work. About 300 physical examinations have been given, and approximately 6% present more or less serious organic lesions which require a regulation of their activities. The department is fairly well equipped for minor surgical work and to date about 80 such cases have been treated with practically no expense to the student.

A great variety of medical cases have applied for diagnosis and treatment most of which have come within the scope of our work. Those cases belonging strictly to the specialists have been advised where to go. In these cases I have been able to secure special low rates wherever the financial conditions of the student warranted such action. Three cases of contagion have been recognized, and isolated in the early stages of the disease which no doubt prevented many exposures.

The athletes are all watched as to their physical condition, and all injuries given prompt and careful attention with very little expense to the department.

The students are being watched for the detection of vicious and injurious habits of living, and wherever such habits are suspected, suggestions are offered directly or indirectly, for their correction, and the benefits of such suggestions are apparent in several cases now under observation.

At the present time, about 400 students have applied for advice, diagnosis, treatment for physical examinations, aggregating about 850 visits, and of these comparatively few have abused their privilege by calling for the physician for conditions so trifling as to require no attention. Probably most of these cases would have gone untreated, and certainly most of those who come for advice only, would have gone without such advice had it been necessary for

them to secure it at the price of a visit to a regular practitioner.

The department is handicapped, however, because of lack of supplies and equipment, and a great deal of work is going undone because of this. Realizing the scarcity of funds and the necessity for strict economy in all departments, I have put my estimate at what I consider the lowest limit in asking for the sum of \$2,500.00 to equip and handle the departments of Physiology and Medical Supervision for the coming biennium.

Physiology.

Equipment	\$1,300.00
Maintenance	200.00

Medical Supervision.

Equipment	800.00
Maintenance	200.00

Respectfully submitted,

R. O. PORTER,
Medical Supervisor and
Professor of Physiology.

DEPARTMENT OF PUBLICATIONS.

To the President of the College:

Sir: I have the honor to submit herewith a report of the Department of Publications.

Since September 1, all publications of the Experiment Station, Extension Division, and Interior Instruction, have come through one office where they have been edited, and numbered in a College series. A complete record is taken of each publication, including volume and circular, or bulletin, number, title, author, and date of issuance.

Another new development of the year is the establishment of the common mailing room for all publications sent out by the Institution. While this system is as yet im-

perfectly organized it promises well, and
 Mailing Room there is no doubt that it can be operated
 successfully, with increased efficiency and
 economy for the College.

The purchase of a new motor-driven addressing machine, which has already been considered, will involve the expenditure of about \$200.00. Furthermore, the department will need a separate appropriation each year for the purchase of stamps for mailing, hiring of extra help, such as the addressing of envelopes will necessitate, and various other expenses. This will require an appropriation of about \$75.00.

The multigraph has been moved from room 105 to the mailing room, and all the printing is being done there. Complaints have been registered by members of the faculty that the service from the multigraph is very slow and uncertain. This condition is due to the fact that the men who are operating this machine, are carrying full courses, and can be found in the room only at odd hours.

It appeals to me that it would be very desirable to have one competent man, who is able to operate the multigraph, in charge of the mailing room on full time. A change on this machine is very undesirable, being expensive and resulting in poorer service. A permanent employee from this standpoint is likewise desirable.

Respectfully submitted,

LOWRY NELSON,
 In Charge of Publications.

DEPARTMENT OF RURAL ARCHITECTURE AND SURVEYING.

To the President of the College:

Sir: The following is a report of this Department for the past two years.

Listed below are the courses taught in the department:

- Rural Architecture 1.
- Rural Architecture 3.
- Rural Architecture 4.

Rural Architecture 9.

Surveying 1.

Surveying 2.

Previous to this year the head of the department gave all of the courses in Irrigation and Drainage, with the exception of Irrigation 2, and at present is giving Irrigation 9.

Outside of the regular school work the head of the department was, in 1915, in charge of exhibits and fairs, and has designed and aided in the construction of the College sewer system. Early in the biennium, the active charge of the State Power Plant was turned over to the head of the department. In consequence of Work Covered a low water year, and the anxiety of the farmers regarding possible seepage losses from the State reservoir, the water used by the plant has been in litigation through the entire period, involving considerable new construction, and a great deal of water measuring for the protection of the State's rights. A thorough investigation of the seepage losses has been made by a Board of Engineers, of which the head of the department is a member, to determine what the actual losses are. This report is nearing completion. This work for the Power Plant, in addition to tabulating the output and consumption for adjusting transmission charges for power delivered to the various State institutions, has been quite a burden to the department in addition to the regular work.

The increasing demand for power by the State institutions requires a very careful operation of the plant to develop the power required, and necessitates a closer cooperation of the State institutions with those in charge here. This requires considerable correspondence, due to the fact that we keep on hand quite a store of accessories for the electric meters. It is costing about \$25.00 a month at present for help in tabulating the power consumption and output. This work is being done by students at odd times, which delays its completion unduly, and is very unsatisfactory to the Utah Power and Light Company. In the light of these facts, and the fact that the head of the department is Di-

rector of the School of Agricultural Engineering and Mechanic Arts, which in itself demands additional work, it is urged that the department be allowed a dictaphone for the building and an assistant at about \$750.00 per year; part of his time to be chargeable to the power plant.

Referring to the work in surveying, will say that we are giving a strong course for the students majoring in that work, and we are arranging a course requiring no mathematical prerequisites, to be adapted solely to agricultural surveying problems which can be handled by those taking the course in agriculture. A need has been felt for the course this year.

An increasing interest is being shown each year in the work of Rural Architecture. The work is as yet quite new, but is gradually becoming better standardized. It is the aim of the Department to furnish plans for all kinds of farm buildings to the farmers, as soon as enough help can be furnished to properly take care of the many requests which we expect will come when the plan is put into operation.

Respectfully submitted,

RAY B. WEST,

Professor of Agricultural Engineering.

DEPARTMENT OF VETERINARY SCIENCE.

To the President of the College:

Sir: The following is a report of the Department of Veterinary Science for the past two years.

Courses offered in this department:

- Veterinary Elements.
- Winter Course.
- Comparative Anatomy.
- Obstetrics.
- Animal Physiology.
- Clinic (Animal).
- Horseshoeing.
- Dissection.

The department head does all the teaching in this de-

partment. In connection with the instruction work, looking after the health of all college and station livestock requires considerable time. This work must be attended to either day or night, Sundays or holidays, when the need requires.

During the past two years much time has been devoted to Extension work, taking part in Farmers' schools and round-ups in all parts of the State. There is a great demand, as well as need, for demonstration and instruction in Veterinary Science; therefore, this subject has been presented in nearly all of our extension schools and round-ups.

Extension
Work

Regular trips are made to the Branch Agricultural College at Cedar City to instruct and demonstrate this line of work.

This department also investigated a number of outbreaks of contagious diseases among animals and outlined methods for their control and eradication. A number of articles have been written for papers and several lectures on diseases of animals delivered, besides attending to an ever increasing correspondence.

The people of the State are being converted to securing more and better animals, and the importance of properly looking after them; therefore, a great many are very anxious to learn something regarding animal diseases, as well as the manner of preventing and combating them.

Besides our regular required work we offer special work for students wishing to elect Veterinary Science as a profession, a good foundation being acquired for which students get credit in regular veterinary schools. In the past quite a number of our students have taken advantage of this work, and on completion have gone elsewhere to finish. More work should be offered, especially for students taking our winter course; but without assistance this could not be undertaken. For the welfare of this department and the livestock interests of this State, some help should be provided. At the present time our classes must be neglected when the department head is away on College and Extension work.

One of our greatest needs is more room and equipment to carry on this work successfully. A part of a shed in which we hold clinic has been provided, for which we

are thankful, but more room is needed with
 Need for Room an enclosure for more privacy in our work.

We greatly need a veterinary building. The
 quarters we now occupy are inadequate. We should
 either have a veterinary building or one in connection with
 the Animal Husbandry and Dairy Departments. We are

also in need of an isolation ward where newly
 Equipment purchased, sick, or diseased animals could be
 quarantined and closely guarded so as not to
 expose the remainder of the livestock.

The outlook for the work along veterinary lines is
 very promising. The people are becoming educated to
 taking better care of their animals, and are anxious for
 more light on the subject of diseases and their prevention.

If livestock diseases are properly controlled,
 Outlook many human diseases are also held in check,
 as some are directly transmissible from ani-
 mals to human beings. Preventive medicine is working
 wonders and our students should be instructed so as to be
 able to test animals for disease, as well as vaccinate and
 apply serum for prevention and treatment, in order to help
 in localities where there are no qualified veterinarians;
 thus successfully handling the common troubles among
 livestock on the farm.

Respectfully submitted,

H. J. FREDERICK,

Professor of Veterinary Science.

DEPARTMENT OF ZOOLOGY AND ENTOMOLOGY.

To the President of the College:

Sir: In answer to your request of October 6, I am
 submitting herewith a report of the Department of Zoology
 and Entomology.

Besides the regular class work in this department, I
 have four students doing research work, one of them tak-
 ing ten hours this term. The work in this particular case
 is divided in three groups. In the first group, with four
 hours credit the student is assigned problems relating to
 eugenics with respect to immediately related families. In

the second group with three hours' credit, the student is assigned to direct research work on records already in the institution and related to certain specific subjects. In the third group of three hours credit, students work upon advanced embryology. Considerable of the work in the first group is outside, and the same is true in the last group, so that the actual periods that the instructor has to work with the student, are not as great as would be represented by ten credit hours. Mr. Sorenson and Mr. Aldous also help me with the Zoology 3 classes, and Mr. Aldous helps Mr. Sorenson with the Zoology 2 classes.

We should have in addition to the force now employed, a permanent laboratory assistant, whose work would be to count and take care of material brought in from time to time, to aid in the laboratory Assistance whenever necessary, by preparing materials for the classes, and cleaning up after classes have gone, to help with matters relating to the museum, and other work of this character. It is probable that an assistant could be secured for \$60.00 per month. During the summer this assistant could be very serviceably used in preparing and collecting materials for use in the school season. I would like to have a little extra money assigned for the purpose of adding to our museum, birds and mammals of this region. We have in the institution at this time, Mr. Gerald Thorne, who is a Sophomore this year, and is doing very creditable work along this line.

We need a new sink and drain board in each of the two laboratory rooms, one that is large enough to handle the materials that we have to wash and take care of in our laboratory classes. In the taxidermy room we also need water and a sink. It is a great disadvantage to have to go outside for water to use in preparing materials necessary in this room, and the waste water all has to be carried up one flight of stairs in order to reach some place where it can be thrown away. We would like some shelves in the museum upon which the larger animals could be placed. These should be arranged on the sides of the museum between the windows at least six feet from the floor. They could probably best be supported by pieces of gas pipe resting

on the floor. In this way, we could place the larger animals where they would not be so likely damaged by visitors to the museum. We also need another exhibition case for the museum to handle the materials on hand. In direct equipment for the laboratory classes, we should have 24 microscopes. These will cost about \$35.00 apiece. A good manikin, models of the eye and ear, would be of considerable service in this class of comparative human anatomy, histology and embryology. If the hood in the south laboratory could be equipped with an electric light, it would be of considerable service to us in our work.

For several years, we have asked for the building of an Insectary. While this building would be of service to the Experiment Station, and the department in general, it is very essentially needed in the department to carry on the proper kind of teaching in our entomology classes. A

Insectary small building of this kind separate from other glass houses, and so arranged that the temperatures could be adjusted to suit the particular insects or animals that were being grown, would often aid us in our Experiment Station work, as well as be of service throughout the year in our class work. In a building of this kind, it would also be possible to carry on some breeding work on small animals that would be of service in explaining inheritance in genetics classes.

We do not need any additional buildings or rooms, or changes in the present quarters, except the equipment of the large class room belonging to the department with a double set of shades which will enable us to use our stereopticon.

Respectfully submitted,

E. G. TITUS,

Professor of Zoology and Entomology.

LIBRARY.

To the President of the College:

Sir: I have the honor to submit the following report of the library for the past biennium. The following is summary of library accessions beginning November 1, 1914, and ending November 1, 1916:

Library Accessions—Statistical.

Books purchased	1964	
Books Eli Pierce Library.....	680	
Books by gift.....	379	
Books deposited by U. S. Government.....	354	
	<hr/>	
Total Books.....		3377
Pamphlets purchased	10	
Pamphlets by gift (exchanged).....	2531	
Pamphlets by U. S. Government.....	725	
	<hr/>	
Total Pamphlets.....		3264
	<hr/>	
Total Addition to Library.....		6641

Present Strength of Library.

Books	30,425	
Pamphlets	36,748	
	<hr/>	
Total		67,173

The Pierce Library of Utah History was purchased by the Board of this Institution. The books have been classified and catalogued with the other books of the Library, but shelved as a special collection. This Pierce Library consists of 680 volumes relating to the history of Utah and Western United States. The Pierce Collection collection includes also many of the publications of the Latter-day Saints, and much of the vast literature which has been written on Mormonism, pro and con.

Many of the volumes are very rare and the entire collection is a valuable and desirable addition to the library.

Notwithstanding the purchase of the Pierce Library Collection, reference to which has been previously catalogued other needs are pressing. We should add to the number and variety of our reference library in the general field of science, history and literature. The need of the hour is a well equipped library, covering the field of technical knowledge and general research.

I feel it as a duty incumbent upon me to call your at-

tention to our lack of room. All of our bound magazines, the value and indispensability of which cannot be measured in terms of cold and bloodless finance, are kept in a room separate and apart from the main library. We have indirect supervision only over these books. Books have been lost by reason of this makeshift policy, born of a desire to overcome congestion. It is imperatively necessary that some provision be made to eliminate this untoward condition.

It is further urged that a library catalog be published annually, for general distribution throughout the State. Our clientele has grown enormously, and the Utah Agricultural College Library should help to care for the literary needs of that clientele.

To discharge its duty and fulfill its mission as above outlined, the library needs a considerable increase in funds.

Respectfully submitted,

GEORGE D. CASTO,
Librarian.

REPORT OF THE REGISTRAR.

To the President of the College:

Sir: I have the honor to submit herewith the report of the registrar.

Up to and including November 29, 1916, the registration for the present biennium is as follows:

Regular registration 1914-1915.....	837	
Summer School 1914.....	207	
Correspondence	401	
Round-Up, Logan	398	
Richfield	144	
Cedar City	303	845
Housekeepers' Conference, Logan.....	329	
Richfield	118	
Cedar City	230	677
Total		2967
Less names repeated.....	42	
Total		2925

Regular registration 1915-16.....	875	
Summer School 1915.....	208	
Correspondence	415	
Farmers' Convention, Logan.....	326	
Cedar City	304	
Monroe	279	909
Housekeepers' Conference, Logan.....	216	
Cedar City	290	
Monroe	231	737
Total		3144
Less names repeated.....	45	
Total		3099

Regular Registration 1916-17 (To Nov. 29, 1916).....	799
Summer School 1916.....	256
Correspondence	503
	<hr/>
Total	1558

REGISTRAR'S REPORT OF ATTENDANCE BY SCHOOLS FOR THE
YEAR 1914-15 to June 8, 1915.

COLLEGE COURSES.

	Agri. (Men)	Agri. Engr. (Men)	Commerce (Men)	Commerce (Women)	Gen. Sci. (Men)	Gen. Sci. (Women)	Home Econ (Women)	Mec. Arts (Men)	Total	Grand Total
Graduates ...	12	2	3	....	4	2	3	....	26	
Seniors	41	7	6	1	5	2	16	5	83	
Juniors	47	15	11	....	8	1	26	....	108	
Sophomores ..	21	1	13	1	7	3	18	2	66	
Freshmen ...	67	8	13	....	14	4	34	4	144	
Specials	33	3	7	....	8	5	52	5	113	
Total	221	36	53	2	46	17	149	16	....	540

VOCATIONAL.

Third Year ..	24	6	11	9	18	....	28	9	105	
Prac. Course	20	....	13	4	1	....	37	4	79	
Specials	2	1	1	1	1	....	7	5	18	
Win. Course	35	....	15	....	2	....	....	43	95	
Total	81	7	40	14	22	....	72	61	....	297

Summer School 1914.....	207
Correspondence Department	401
Total	1445
Less names repeated.....	42
Total	1403

Round-Up and Housekeepers' Conference.

Round-Up:

Logan	398	
Richfield	144	
Cedar City	303	845

Housekeepers' Conference:

Logan	329	
Richfield	118	
Cedar City	230	677

Net Total2925

REGISTRAR'S REPORT OF ATTENDANCE BY SCHOOLS FOR THE
YEAR 1915-16 to June 6, 1916.

COLLEGE.

	Agri. (Men)	Agri, Eng. (Men)	Commerce (Men)	Commerce (Women)	Gen. Sci. (Men)	Gen. Sci. (Women)	Home Econ. (Women)	Mec. Arts (Men)	Total	Grand Total
Graduates ...	9	3	1	1	3	2	4	...	23	
Seniors	56	8	12	1	11	2	17	3	110	
Juniors	14	1	8	...	8	2	22	4	59	
Sophomores.	43	4	9	...	12	2	28	5	103	
Freshmen	53	14	21	2	22	11	60	6	189	
Specials	35	4	18	6	16	9	62	6	156	
Total	210	34	69	10	72	28	193	24	...	640
Practical	23	2	13	2	1	1	1	7	50	
Specials	2	...	7	3	2	1	40	2	57	
Win. Course	41	7	9	1	...	...	2	68	128	235

Summer School 1915.....	208
Correspondence	415
	<hr/>
Total	1498
Less names repeated.....	45
	<hr/>
Total	1453

Farmers' Convention and Housekeepers' Conference.

Conventions:			
Logan	326		
Cedar City	304		
Monroe	279	909	
Housekeepers' Conference:			
Logan	216		
Cedar City	290		
Monroe	231	737	
		<hr/>	
Net Total	3099		

In my report two years ago it was said: "The records of this office are very valuable, and their destruction by fire would be an irreparable loss. They could never be replaced, and the records of the work of thousands of students would be lost." It is now strongly urged that a fire-proof vault be built in the office for the records.

Respectfully submitted,

GEORGE THOMAS,
Registrar.

THE STATE POWER PLANT.

To the President of the College:

Sir: The State Power Plant at the present time is operating very satisfactorily. We are producing enough power to supply all of the institutions, and I anticipate that we will buy no power this winter from the Utah Power and Light Company. I will say, however, that it takes extreme care to produce enough during the winter months. During the last bien-

nium, we have made several improvements in the plant. A rheostat has been installed; also a motor control for the gates under the dam, by which we can regulate the flow of the river. This has been the means of eliminating the complaints of the irrigators of the district, to the effect that we fluctuate the flow of the river, and they are at present quite satisfied. We have also raised the wires over the roadway at the plant, eliminating the old switch rack, and putting the high tension wires in conduit. We have in this way complied with the request of the Logan City Commissioners, and made a very safe crossing.

The last two years have been almost constant litigation over alleged leakage of water through the reservoir. An investigation into the matter has shown that at our highest stage in the reservoir we lose about 16 sec. ft., but that when the reservoir level is lowered to prevent the water from overflowing a small area known to be full of sink holes, that the loss of water disappears. This lower stage of the reservoir is only about four feet below the top, and is a stage that can maintain during the irrigation period each year and still produce more than enough power for our needs. The irrigation season is during our smallest demand for power. Our troubles in this respect with the irrigator have not as yet been adjusted. Our report is just now completed, but our recommendations have not as yet been formulated. I am asking for \$1,000.00 to take care of any adjustments that might be found necessary later.

Our overdraft, which I figure will be about \$4,737.00 by January 1, 1917, can be accounted for as follows:

Attorney's fees defending State against claims for injuries sus- tained, not anticipated in last re- quest	\$1,000.00
Power drawn from Utah Power & Light Co., due to low water last winter	1,687.00
Construction necessary to control flow of river and prevent water fluctuation to irrigators.....	950.00
Cost of making special investigation of water losses in reservoir.....	1,100.00
Total	<hr/> \$4,737.00

We have spent an additional thousand in defending ourselves against the water users.

Our needs for the next two years are as follows:

Overdraft, January 1, 1917.....	\$4,737.00
Salaries 24 months at \$280 per month...	6,720.00
Extra help and vacations.....	350.00
Traveling expenses	\$ 200.00
Maintenance, supplies, etc.....	800.00
Unforeseen (accidents to men and machinery, high water damage, etc.)	2,000.00
Litigation troubles	1,000.00
Lowering tailrace to get 10% more power	4,000.00
Average transmission charges last year per month 27994 K W at one one-half cents...	\$419.91
Plus 5% increase anticipated	20.99
Total	440.90
Twenty-four months at \$440.00 per month	10,581.60
Total	\$30,388.60

Respectfully submitted,

RAY B. WEST,

Professor in Charge, State Power Plant.

DEPARTMENT OF WATER, HEAT, LIGHT AND SEWERAGE.

To the President of the College:

Sir: In compliance with your request, I have the honor to submit herewith a report of the Water, Heat, Light, and Sewerage Systems of the College. The following are some of the needs of these departments:

WATER WORKS.

The extension of water main to the cattle barn, and a two-way hydrant.....	\$ 500.00
We have at present a 6-in. wood pipe for main supply to the College, which has broken quite a number of times the last year, and once since the pressure has been increased from the new reservoir. I should recommend that it be changed, if possible, for an iron pipe.....	800.00
We should have some new hose for fire protection, and the extension of fire lines in the attic....	300.00
Twelve new angle valves.....	27.00
Two small fire engines, one on the first and one on the second floor of main building.....	350.00

STEAM HEAT.

A short tunnel from Main Building to Mechanic Art Building, approximate cost.....	500.00
A new steam pipe connected through main hall in basement should be installed, instead of the one running through the ground at back of main building for over 600 feet, which means a great deal of condensation. This would be saved if in the main building.....	500.00
I should also like to have the new boiler house completed according to former plans. This would cost approximately	15,000.00
It would be economical to install one of the old boilers we have on hand to care for the President's, Director's, and Extension Director's residences. We could then use cheaper fuel and have it located in main plant.....	1,000.00

POWER AND LIGHT.

All lines should be changed to run through tunnel conduit, where possible.....	\$1,000.00
New high line to east of Chemistry Building.....	1,000.00
New lines from Chemistry Building to Director's, and all the cottages to care for lights and ranges which they want to install.....	500.00

Some iron posts and lines in conduit for campus lighting	1,000.00
Rewiring cottages	75.00
New line to Hospital.....	100.00
Valves, pipe, gas cocks, etc., for re-	
Gas Plant pair and extension of Gas Plant....	250.00
Changes of garbage burner to main building, to heat water for lavatories and cafeteria.....	150.00

We have no fund at present for sewerage. It costs considerable each year to replace toilets, lavatory sinks, traps, etc., which is now charged to water works. We had \$2,000.00 last year to install new mains and connect College to City, but this money could be used only for extension of the system. If there is an addition at M. A. Building for new locker rooms, it would require about \$350.00 for radiation and connection with the main steam plant. It would also heat the stock room below.

	4 New toilets.
New Locker	3 New Urinals.
Room	24 Lavatories.
	1 Drinking Fountain.
	1 Slop bowl.

With pipe fittings and labor to connect with main sewerage.
approximately \$1,500.00

Respectfully submitted,

CHARLES BATT,
Superintendent Water, Gas, Heating and Lighting Plants.

REPORT OF THE SUPERINTENDENT OF BUILDINGS.

To the President of the College:

Sir: As per your request of recent date, I submit herewith a report of the Department of Repairs and Improvements:

During the past biennium the Chemistry Building has been finished and three departments, formerly located in the

Past
Improvements

Main Building, have moved into it. A shed, twenty by sixty feet, has been built for the department of Veterinary Science. In the Main Building two new lavatories, one for men and one for women, have been installed; also two smaller ones to be used by the members of the faculty.

About a dozen new offices have been made by putting in partitions in various rooms. A new Sorority room has also been provided on the third floor.

Maple floor has been laid in the large room now used as the Museum. A large number of rooms in the various buildings have been painted.

The Experiment Station Building has been entirely renovated, having been painted both inside and outside, and new linoleum laid on the floors. In this building, also, bookshelves and various other pieces of furniture have been provided. Mason treads have been placed on a large number of stairways.

A new central mailing room has been established, for which tables and shelves were made. Cement floors have been laid in the washroom at the Cafeteria and in the Farm Mechanics laboratory.

A dozen large window screens were provided for the Woman's Building.

At the barns and poultry houses various repairs have been attended to; eighteen colony houses having been painted.

New floors have been laid in parts of the President's and Director's residences, and various other interior repairs have been made on all the residences.

In addition to the above, we are constantly giving attention to the general upkeep of all the buildings, such as window glass and shades, furniture repair and numerous other minor things.

During the coming biennium several buildings, such as the Mechanic Arts Building, Cattle, Hog and Sheep Barns, and some of the Residences, will need exterior painting.

Hard wood floors should be provided in some parts of the Main Building.

Considerable interior painting will be necessary in the Main Building and the Woman's Building.

Therefore, in order to take reasonable care of all necessary and unavoidable repairs and improvements and such

changes as may occur in providing new class
 For rooms or offices or additional furniture, and to
 General cover the labor and material for the needed
 Upkeep painting, carpentry, tin repair, window glass
 and shades, etc., it is my judgment that not less
 than \$8,000.00 per year will be required. For the biennium,
 \$16,000.00.

Now let me call your attention to some special needs that
 I think should be attended to during these two years. First,
 the main floor in the Gymnasium is in such a condition that
 something must be done to it, and it appears that about the
 only thing that can be done is to take up the
 Special Needs floor and re-lay it, using such part of the old
 flooring as can be used. This, if done, will mean
 an expenditure of about \$2,000.00.

Second, in the Mechanic Arts Building, an addition to
 the present toilet and dressing room, or an entirely new room
 for that purpose is badly needed. I would suggest for your
 consideration that new quarters might be provided by adding a
 second story to the present lumber storeroom. This, of course,
 would cost more than an addition to the present room, but
 would also be far more sanitary. To provide this new toilet
 and dressing room would require not less than from \$2,000.00
 to \$3,000.00, according to the kind of construction decided
 upon.

Third, Professors West and Pulley have both spoken
 of the urgent need for an addition of about forty feet to the
 east end of the Iron Machine Shop, in order to provide room
 to handle automobile work. Certainly the present shop is en-
 tirely inadequate for that work. Such an addition would prob-
 ably cost from \$3,000.00 to \$4,000.00.

Fourth, a building about 24 feet by 60 feet, to be used as
 Repair shop, is greatly needed. We could then remove from
 the Main Building the present paint and carpentry shop, which
 at the present time is more or less a source of danger and
 also very unsatisfactorily located. Such a building could be
 built for from \$1,500.00 to \$2,000.00, according to kind de-
 cided upon.

Fifth, the taking down or removing and reconstructing
 the Horse Barn and Tie Shed should, it seems to me, receive
 attention. Since the Chemistry Building was erected, the
 Horse Barn is about in the center of the campus, and cer-

tainly ought to be moved to some other location. The cost of this I cannot estimate, it all depends upon whether the barn is to be reconstructed as at present, or a new one, entirely different and more modern, is wanted. It appears to me that the question of a new horse barn, with garage, might be very properly considered.

Many other needs could be mentioned, but the above I consider some of the most urgent at the present time.

SUMMARY:

General Repair and Improvement.....	\$16,000.00
Floor Gymnasium	2,000.00
New Toilets M. A. Building.....	3,000.00
Addition to Machine Shop.....	4,000.00
Repair and Improvement Shop.....	2,000.00
Horse Barn—no estimate	

Total \$27,000.00

For Janitorial labor and supplies, not including salaries—and based on the present number of buildings, we shall need about \$3,500.00 per year, \$7,000.00 for the biennium.

Respectfully submitted,

R. O. LARSEN,
Superintendent of Buildings.

REPORT OF THE SUPERINTENDENT OF GROUNDS.

To the President of the College:

Sir: In answer to your recent request for a statement of the work and needs of my department, I herewith submit the following:

During the past two years various improvements and plantings have been made on the campus of the Utah Agricultural College. Many hardwood trees, as well as shrubs (mostly native) and lawns, have been set out at various places on the grounds. These improvements have continually enlarged the College campus. The steep grade directly in front of the entrance to the Main Building has been considerably reduced, as well as

Improvements

widened, and native shrubs have been planted on either side. The number of flower beds improving the grounds has been increased during this time. Nine thousand plants of various kinds were used in these beds. Preparation for a lawn west of the Chemistry Building has been made, which will be completed in the spring of 1917.

A practical course in Floriculture and Landscape gardening has been conducted, which was attended once a week by from six to eight students. During the last Course in Round-Up a practical course was given along Floriculture the same line. An average of thirty students a day attended this class. In the fall of 1915 a circular from this department, entitled "The Care of House Plants", was published by the Extension Division.

Some cement work, consisting of a walk and steps leading from the Gymnasium to the Woman's Building, and of a similar walk from the Gymnasium to the street car line is one of the needs of this department. In addition I Needs would like to suggest that several large arc lights be placed at different points on the campus. These are especially needed in front of each building on the campus, and on the walk leading directly from the Main Building to the car line. Estimated cost.....\$250.00

Respectfully submitted,

EMIL HANSEN,
Supt. of Grounds and Greenhouses.

Biennial Financial Report of the Secretary

For the Biennium ending November 30, 1916.

Honorable President and Board of Trustees, Utah Agricultural College:

Ladies and Gentlemen: In connection with my Biennial Financial Report which I am enclosing herewith I beg to repeat the following suggestions and recommendations from my report of two years ago. "In the first place I wish to state that I consider the report as practically valueless, except for purposes of record, for the reason that the financial period covered by same is as follows: The last seven months of the year, ending June 30th, 1915, the entire year, ending June 30th, 1916, and the first five months of the year beginning July 1, 1916. The dividing of the year at this time makes the report very hard of interpretation for several reasons. First, it is necessary for us to show large overdrafts in same for the reason that we have expended moneys and do not get our returns from the State until the fall taxes come in which is generally after November 30th. Second, this date generally finds us right in the middle of many operations such as building and the entire year's school work and therefore compels us to report part of the same operation in different reports two years apart. Third, we are supposed to include all bills and receipts up to November 30th and have our report in the hands of the Governor by December 15th. As it takes us until about December 10th to get all of the bills, payrolls, etc., in and paid it gives us but very little time to make out our report properly.

"I beg leave, therefore, to recommend that an effort be made to have the time of the closing of the books and getting out the report changed from November 30th to the June 30th previous. Since the State Institutions have been placed on a mill tax basis I can see absolutely no reason why this should

not be done. It would give us time in the summer months when we are not so busy with regular school work to make up our inventories and to get out proper and complete reports. The reports could then be gotten out in such a way that they would be of some value and would also be of much more value for the reason that they would cover definite natural school periods for which definite appropriations and allowances had been made."

The following is my Biennial Financial Report. It is made up of the following items:

- I. A report of the Receipts and Expenditures of all Regular Funds as follows:
 - A. The College Proper.
 - B. The Cedar City Branch.
 - C. The Extension Division.
 - a. The Farmers' Institute Fund.
 - b. The Farm and Home Demonstration Fund.
 - c. The Smith-Lever Fund.
 - D. The Experiment Station.
 - a. The Hatch Fund.
 - b. The Adams Fund.
 - c. The State Appropriation.
 - d. The Miscellaneous Fund (Sales, etc.)
- II. A report of the College Incidental Fund.
- III. A Report of the Receipts and Disbursements of the Student Body Organization.
- IV. A Summary of the Inventory of all College Property.
- V. A Report of the Fire Insurance Carried.

I. RECEIPTS AND EXPENDITURES.

A. THE COLLEGE.

Receipts:

Cash on hand Nov. 30, 1914.....	\$ 1,123.63
From U. S. Government (Morrill & Nelson Funds)	100,000.00
From State (General Maintenance—Mill Tax)	150,426.29
From State (Interest on Land Grand Fund)...	28,426.32
From State for Deficit Allowance.....	6,642.95
From State for New Chemistry Building.....	55,000.00
From State for Sewerage System Improvements	5,821.38

Fees from Students (Entrance and Laboratory)	21,284.55
Sales of Products, etc.....	10,261.19
Graduating Fees	887.50
Cafeteria (Reimbursements for Improvements paid for by College).....	1,506.32
Gymnasium Fees turned in.....	963.75
Creamery Profit	385.61
Class of 1913 (Larsen Library Donation).....	10.00
Class of 1914 (Chimes Donation).....	700.00
From Student Body—Office help.....	120.00
From B. Y. C. for Teachers Furnished.....	75.00
From Interest on Deposit at First National Bank	10.20
State Power Plant Appropriation.....	33,180.35
Add Overdraft our Books (Due from State)	23,840.37
State Fund Overdraft on Treas- urer	\$48,962.37
Government Fund Balance on Treasurer	23,738.22
<hr/>	
Overdraft on Treasurer.....	\$25,224.15
Less Cash on Hand (In- cluding Revolving Fund \$1,000.00)	1,383.78
<hr/>	
Add Overdraft Power Plant Fund (Due from State)	3,606.75
<hr/>	
Total.....	\$444,272.16

Expenditures:

Overdraft on Treasurer, Nov. 30, 1914.....	\$ 24,907.05
General Maintenance	290,937.53
Salaries	\$195,775.98
From Government Fund	\$105,289.65
From State Fund	90,486.33
<hr/>	
Labor (Payrolls, etc.).....	18,238.39
Supplies	25,239.74
Fuel	11,514.76

Insurance	2,161.95	
Light and Power	1,785.48	
Telephone and Telegraph.....	1,586.20	
Postage and Stationery.....	2,305.16	
Printing and Advertising.....	11,064.68	
Repairs (Plant and Equipment)	4,757.61	
Traveling Expenses	3,938.10	
Water Tax	1,422.20	
Fairs and Exhibits.....	3,345.53	
Interest on Overdraft at Bank	1,086.57	
Unclassified Expense	6,715.18	
<hr/>		
General Equipment		20,466.48
Furniture	4,932.13	
Machinery and Implements...	2,435.06	
Scientific Apparatus	3,879.16	
Books, Maps, etc.....	5,425.64	
Live-stock	415.50	
Unclassified	3,378.99	
<hr/>		
Building, Repairs and Improvements.....		17,183.39
Main Building	7,621.53	
Residences	2,562.06	
Campus and Greenhouse.....	1,792.75	
Shops and Barns	554.52	
Light, Heat and Power, Water		
Works and Sewer.....	1,128.74	
Woman's Building	451.40	
Gymnasium	423.80	
Chemistry Building	360.91	
Unclassified	2,287.68	
<hr/>		
State Power Plant		26,322.92
New Sewer System.....		5,966.89
New Chemistry Building.....		58,487.90
<hr/>		
Total.....		\$444,272 16

B. THE CEDAR CITY BRANCH.

Receipts:

Cash on hand Nov. 30, 1914 (Revolving Fund)	\$ 200.00
From State Mill Tax.....	44,216.99
State Appropriation—Repairing Old Buildings	8,500.00
State Appropriation — Repairing Heating Plant	1,500.00
State Appropriation—Camp House and Stables	301.33
State Appropriation—Sheds, Poultry Runs and Gates.....	1,000.00
State Appropriation—Barn and Live Stock	1,344.29
Fees from Students.....	4,154.50
Sale of Products, etc.....	1,061.20
Add Overdraft our Books (Due from State)	12,869.73
Treasurer Overdraft..	\$13,069.73
Less Cash on Hand..	200.00

Total.....	\$75,148.04
------------	-------------

Expenditures:

Overdraft on Treasurer Nov.30,1914..	\$ 9,640.88
Salaries	37,552.64
Pay Rolls	2,080.90
Supplies	2,718.36
Postage and Stationery.....	480.17
Printing and Advertising	1,374.74
Fuel	2,058.78
Light and Power	448.47
Insurance	13.50
Traveling Expenses	688.33
Repairs Plant and Equipment.....	589.31
Freight and Express	262.37
Equipment	685.53
New Barn and Live-stock.....	810.07

Farm Expense	1,011.91	
Interest on Overdraft at Bank.....	387.50	
Repairing Old Buildings.....	10,111.45	
Repairing Heating Plant	2,315.25	
Sheds, Poultry Runs and Gates.....	1,136.56	
Unclassified	433.19	
Camp House and Stables.....	348.13	
	<hr/>	
Total.....		\$75,148.04

C. THE EXTENSION DIVISION.

a. Farmers' Institute Fund.

Receipts:

From State Appropriation	\$21,883.55	
Fees from Schools Held.....	3,004.00	
Add Overdraft on Treasurer	994.59	
	<hr/>	
Total.....		\$25,882.14

Expenditures:

Overdraft on Treasurer Nov.30,1914.\$	5,063.27	
Salaries and Labor.....	12,558.59	
Traveling Expenses	3,418.80	
Printing and Advertising	694.95	
Supplies, etc.	629.69	
Equipment	177.01	
Interest on Overdraft	192.50	
Cost of Round-Ups at Logan.....	1,537.57	
Cost of Outside Round-Ups.....	1,609.76	
	<hr/>	
Total.....		\$25,882.14

b. Farm and Home Demonstration Fund.

Receipts:

From State Appropriation.....	\$24,500.00	
From Millard County	775.00	
From Carbon County	720.00	
From Emery County.....	720.00	

From Sevier County	1,500.00	
From Beaver County.....	687.43	
From Utah County	1,566.65	
From Salt Lake County.....	900.00	
From Weber County.....	800.00	
From Sales, Rentals, Refunds & Gifts	413.00	
Add Overdraft on Treasurer (Due from Counties)	4,345.11	
	<hr/>	
Total.....		\$36,927.19

Expenditures:

Overdraft Nov. 30, 1914	\$ 796.22	
Salaries and Labor.....	19,836.73	
Traveling Expenses	10,495.89	
Printing and Advertising	2,178.23	
Equipment	2,506.50	
Supplies	1,113.62	
	<hr/>	
Total.....		\$36,927.19

c. Smith-Lever Fund.

Receipts:

From U. S. Government.....	\$24,670.41	
Add Overdraft on Treasurer (Due from U. S. Government).....	5,294.67	
	<hr/>	
Total.....		\$29,965.08

Expenditures:

Overdraft on Treasurer Nov.30,1914.	\$ 1,012.46	
Salaries and Labor.....	19,510.94	
Traveling Expenses	6,648.06	
Publications	262.16	
Printing and Stationery	324.32	
Postage and Stationery, etc.....	484.00	
Heat, Light, Water and Power.....	4.40	
Supplies	368.07	
Equipment	1,350.67	
	<hr/>	
Total.....		\$29,965.08

Summary of Extension Division.

Receipts:

Farmers' Institute Fund.....	\$24,887.55	
Farm & Home Demonstration Fund	32,582.08	
Smith-Lever Fund	24,670.41	
Add Overdraft (Due from Gov., State and Counties)	10,634.37	
	<hr/>	
Total.....		\$92,774.41

Expenditures:

Farmers' Institute Fund.....	\$25,882.14	
Farm & Home Demonstration Fund	36,927.19	
Smith-Lever Fund	29,965.08	
	<hr/>	
Total.....		\$92,774.41

D. EXPERIMENT STATION.

a. Hatch Fund.

Receipts:

From U. S. Government Appropria- tion	\$30,000.00	
	<hr/>	
Total.....		\$30,000.00

Expenditures:

Overdraft on Treasurer Nov. 30, 1914.	\$ 1,969.48
Salaries	13,311.46
Labor	4,918.74
Publications	36.00
Postage and Stationery	1,296.53
Freight and Express	32.55
Heat, Light and Water.....	174.05
Chemical Supplies	878.41
Seeds, Plants and Sundry Supplies....	645.72
Fertilizers (Including Water Tax) ..	186.00

Feeding Stuffs	1,829.96	
Library	114.50	
Tools, Implements and Machinery..	798.55	
Furniture and Fixtures.....	773.76	
Scientific Apparatus	162.38	
Live-stock	266.00	
Traveling Expense	1,036.67	
Buildings and Land.....	706.60	
Contingent Expenses	20.00	
Balance with Treasurer.....	842.64	
<hr/>		
Total.....		\$30,000.00

b. Adams Fund.

Receipts:

Balance with Treasurer Nov.30,1914..	\$ 1,153.18	
From U. S. Government.....	30,000.00	
Add Overdraft on Treasurer	319.68	
<hr/>		
Total.....		\$31,472.86

Expenditures:

Salaries	\$20,201.64	
Labor	6,790.42	
Postage and Stationery	49.80	
Freight and Express	9.66	
Heat, Light and Water.....	484.75	
Chemical Supplies	1,314.38	
Seeds, Plants and Sundry Supplies..	254.03	
Feeding Stuffs	251.13	
Library	105.17	
Tools, Implements and Machinery..	268.23	
Furniture and Fixtures.....	769.58	
Scientific Apparatus	307.17	
Live-stock	18.37	
Traveling Expenses	435.34	
Building and Land.....	213.19	
<hr/>		
Total.....		\$31,472.86

c. State Appropriation.

Receipts:

Cash on hand Nov. 30, 1914 (Revolving Fund)	\$ 25.00	
From State Appropriation	26,829.30	
Southern Farm Sales.....	522.95	
Arid Farm Sales.....	1,946.02	
Irrigation and Drainage Farm Sales....	5.50	
Milk Testing Fees and Sales.....	18.00	
Panguitch Farm Sales.....	4,004.61	
Miscellaneous Sales	322.80	
Overdraft (Due from State).....	366.77	
		<hr/>
Total.....		\$34,040.95

Expenditures:

Panguitch Farm Overdraft on Treasurer Nov. 30, 1914.....	\$ 1,342.78	
Overdraft on Treasurer Nov. 30, 1914	2,491.63	
Salaries	13,425.83	
Labor	9,547.93	
Publications	2,392.74	
Postage and Stationery	302.76	
Chemical Supplies	156.06	
Seeds, Plants and Sundry Supplies..	822.14	
Fertilizers (Including Water Tax) ..	129.93	
Feeding Stuffs	247.50	
Library	30.60	
Tools, Implements and Machinery..	393.78	
Furniture and Fixtures.....	189.92	
Live-stock	237.50	
Traveling Expenses	1,830.94	
Freight and Express.....	53.84	
Heat, Light and Water.....	4.70	
Building and Land.....	172.77	
Interest	75.00	
Contingent Expenses	192.60	
		<hr/>
Total		\$34,040.95

d. Miscellaneous Fund.

Receipts:

Balance with Treasurer Nov. 30, 1914..\$	94.92
From Sale of Products, etc.....	2,530.03

Total.....	\$2,624.95
------------	------------

Expenditures:

Labor	226.67
Publications .....	.....
Postage and Stationery	302.17
Freight and Express	1.17
Heat, Light and Water.....	20.98
Chemical Supplies	208.18
Seeds, Plants and Sundry Supplies...	338.17
Fertilizers	99.40
Feeding Stuffs	148.64
Library	21.04
Tools, Implements and Machinery...	140.55
Furniture and Fixtures.....	184.47
Scientific Apparatus .....	.....
Traveling Expenses	464.90
Contingent Expenses	67.00
Building and Land.....	89.28
Balance with Treasurer.....	312.33

Total.....	\$2,624.95
------------	------------

Summary of Experiment Station.

Receipts:

Hatch Fund	\$30,000.00
Adams Fund	31,153.18
State Fund	33,674.18
Miscellaneous Fund (Sales, etc.)....	2,624.95

Total.....	\$97,452.31
------------	-------------

Expenditures:

Hatch Fund	\$29,157.36
Adams Fund	31,472.86
State Fund	34,040.95
Miscellaneous Fund (Sales, etc.)....	2,312.62
Balance on Treasurer.....	468.52

Total.....	<u>\$97,452.31</u>
------------	--------------------

RECAPITULATION, Receipts and Expenditures.

Summary of Receipts.

A. The College Proper.....	\$416,825.04
B. The Cedar City Branch.....	62,278.31
C. The Extension Division.....	82,140.04
D. The Experiment Station.....	97,452.31

Total Receipts.....	<u>\$658,695.70</u>
---------------------	---------------------

Add Overdraft on Treasurer (Due from Gov., State and Farm Sales.....)	50,482.70
--	-----------

Total.....	<u>\$709,178.40</u>
------------	---------------------

Summary of Expenditures.

A. The College Proper.....	\$444,272.16
B. The Cedar City Branch.....	75,148.04
C. The Extension Division.....	92,774.41
D. The Experiment Station.....	96,983.79

Total.....	<u>\$709,178.40</u>
------------	---------------------

II. COLLEGE INCIDENTAL FUND.

The following is a report of the Receipts and Expenditures of the College Incidental Fund for the two years ending June 30, 1916. In this fund we handle all merchandising and trust accounts. The accounts are either carried perpetually in this Fund or the profits are turned in to the General Fund at the end of each year.

Receipts:

1911 Class Loan Fund Receipts during two years	\$ 1,842.18
1912 Class Locker Fund Receipts dur- ing two years.....	157.00
State Board Horse Commissioners Bal- ance from June 30, 1914.....	1,568.84
State Board Horse Commissioners Re- ceipts during two years.....	3,853.10
Bookstore Sales two years.....	16,263.01
Creamery Sales two years.....	83,535.63
Cafeteria Sales two years.....	15,239.85
Military Suits sold to students.....	4,006.00
Gymnasium Fees, two years.....	2,952.51
Printing Department Sales two years	718.09
Students Deposits, Laboratories, etc...	4,155.25
Military Ball Receipts, two years....	606.06
Adams Field Fund (Student Body Donation)	3,200.00
<hr/>	
Total Receipts.....	\$138,097.52
Overdraft 1911 Class Loan Fund, carried forward	36.38
Overdraft Printing Department, carried forward..	302.10
Overdraft Bookstore, carried forward.....	697.57
Overdraft Adams Field Fund, carried forward...	56.67
Overdraft Military Ball Fund, carried forward...	35.78
<hr/>	
Total.....	\$139,226.02

Disbursements:

Overdraft Creamery June 30, 1914...\$	2,877.83
Overdraft Students Loan Fund June 30, 1914	553.56
Overdraft Adams Field Fund June 30, 1914	350.14
Overdraft Locker Fund June 30, 1914	55.32
Overdraft Military Suit Fund from June 30, 1914.....	86.28
Military Suits for Students Cost.....	3,909.86
1911 Class Loan Fund, Loans.....	1,325.00
1912 Class Locker Fund.....	9.75

State Board Horse Commissioners...	3,385.76	
Bookstore, Books and Merchandise..	16,960.58	
Creamery Milk, Labor and Supplies..	80,272.19	
Profit on Creamery, Paid to College Fund	385.61	
Cafeteria, Labor and Supplies.....	14,704.79	
Gain on Cafeteria, Paid to College Fund	535.06	
Gymnasium Expense, Laundry Work, Towels, Supplies, etc.....	1,988.76	
Gymnasium Fund Balance, Paid to College Fund	963.75	
Students Deposits, Refunded.....	3,492.45	
Students Deposits Forfeited, Paid to College Fund	662.80	
Military Ball Cost, two years.....	641.84	
Printing Department Expense, two years	1,020.19	
Adams Field, Leveling, Fencing, Draining, etc.	2,906.53	
		<hr/>
Total Disbursements.....		\$137,088.05
Balance State Board Horse Commissioners, carried forward		2,036.18
Balance 1912 Class Locker Fund, carried forward		91.93
Balance Military Suit Fund, carried forward.....		9.86
		<hr/>
Total.....		\$139,226.02

III. STUDENT BODY ORGANIZATION.

The following is a report of the Receipts and Expenditures of the U. A. C. Student Body Organization for the two years ending June 30, 1916.

	Net Receipts.	Net Cost.
Balance on Hand July 1, 1914.....	\$ 285.49	
Fees (two years).....	6,972.00	
Received	\$7,029.50	
Refunded	57.50	
		<hr/>

Faculty Tickets Sold.....	390.00	
Foot Ball		\$1,555.86
Received	5,029.25	
Paid Out	6,585.11	
	<hr/>	
Basket Ball	63.59	
Receipts	889.70	
Paid Out	826.11	
	<hr/>	
Base Ball		243.56
Receipts		
Paid Out	243.56	
	<hr/>	
Track Team		588.49
Receipts	145.31	
Paid Out	733.80	
	<hr/>	
Student Body Dances.....		176.20
Receipts	154.25	
Paid Out	330.45	
	<hr/>	
Lyceum Course		732.14
Receipts	2,478.36	
Paid Out	3,210.50	
	<hr/>	
Dramatics		254.07
Receipts	865.20	
Paid Out	1,119.27	
	<hr/>	
Musicals .....		.....
Receipts		
Paid Out		
Student Life		1,271.05
Receipts	1,151.56	
Paid Out	2,422.61	
	<hr/>	
Debating		394.89
Receipts	65.00	
Paid Out	459.89	
	<hr/>	

Tennis	52.05	
Receipts		
Paid Out	52.05	
<hr/>		
Wrestling	117.00	
Receipts	17.65	
Paid Out	134.65	
<hr/>		
Students Hand Book Cost.....	45.75	
Paid for Foot Ball Suits.....	191.81	
Paid for "A" Sweaters for Athletics..	334.91	
Paid for Medals for Awards.....	317.25	
"A" Day Lunch	94.76	
Paid to College for Help.....	240.00	
Adams Field	557.30	
Excursion and Parades	58.95	
Miscellaneous Expenses of Association	365.66	
Balance on Hand.....	119.38	
<hr/>		
Totals.....	\$7,711.08	\$7,711.08

IV. INVENTORIES.

(Not Including Supplies and Land Grant.)
November 30, 1916.

I. The College:

Land and Water Rights, 121 acres @ \$200 per acre	\$ 23,200.00
Buildings and Fixed Equipment.....	563,700.00
Main Building	\$175,000.00
Boiler House & Heating Plant	30,000.00
Gymnasium	65,000.00
Chemistry Building	60,000.00
Experiment Station	5,000.00
Mechanic Arts Building	40,000.00
Women's Building	40,000.00
State Power Plant	80,000.00
Transformer House and Sub- Station	5,800.00
Residences	11,300.00
President's	\$ 4,500.00

Director's	3,000.00	
Agronomist's	2,000.00	
Three Workmen's Cottages	1,800.00	
<hr/>		
Farm Buildings		34,700.00
Horse Barn	\$ 4,000.00	
Cattle Barn	10,000.00	
Sheep Barn	6,000.00	
Piggery	1,700.00	
Poultry House ...	4,700.00	
Stock Judging Pa- vilion	5,300.00	
Tie Sheds and Fencing	3,000.00	
<hr/>		
Veterinary Hospital		1,500.00
Conservatory		6,000.00
Fixed Equipment		10,400.00
Sewer System	\$ 5,500.00	
Water Works	4,000.00	
Commercial Dept. Off. Equip.	900.00	
<hr/>		
General Equipment		170,911.64
Offices		5,589.45
President's Office.	\$ 3,945.55	
Secretary's Office.	1,249.65	
Registrar's Office.	394.25	
<hr/>		
Departments of Instruction...		119,886.27
Agronomy	\$ 2,404.90	
Animal Husbandry	17,366.50	
Art Department ..	1,574.94	
Bacteriology	2,384.80	
Botany	4,068.00	
Correspondence ..	243.65	
Economics	44.50	
Food and Dietetics	656.72	
Machine Work ...	11,268.57	
Carpentry	7,457.98	

Chemistry	6,064.46	
Commerce	3,091.85	
Dairying	3,409.00	
Domestic Science.	6,213.31	
Domestic Arts ...	2,131.30	
Mechanic Arts ...	6,885.84	
Engineering	5,616.78	
English	537.25	
Farm Machinery..	815.44	
Horticulture	11,279.85	
History	52.00	
Mathematics	531.50	
Military	229.90	
Mod. Languages..	28.50	
Music	3,477.00	
Photography	130.95	
Geology and Min- erology	1,722.50	
Physics	6,849.65	
Physical Education	3,981.61	
Veterinary Science	701.45	
Zoology and En- tomology	8,335.40	
Poultry Labora- tory	330.17	
<hr/>		
Miscellaneous Equipment	45,435.92	
Library	\$31,812.75	
Bookstore	264.00	
Janitorial	5,488.86	
Construction, Re- pairs, Plumbing.	1,487.75	
State Board Horse Commissioners .	509.67	
Cafeteria	1,043.13	
Bookstore Mer- chandise	4,713.76	
Exhibits	380.00	
<hr/>		
Total.....		\$758,811.64

II. Branch Agricultural College, Cedar City:

Land Campus (27 acres).....	\$ 5,200.00
Arid Farm (80 acres).....	2,000.00
Buildings and Fixed Equipment.....	124,971.23
Library Building	\$38,000.00
Science Building	36,000.00
Shop Building	10,000.00
Boiler House(boilers, pipes, etc.)	8,300.00
Barn	2,500.00
Library (value)	2,000.00
Furniture	4,518.25
Apparatus, tools, machinery....	15,135.98
Improvements on Lands.....	3,000.00
Livestock	2,267.00
Shed and Yards.....	1,250.00
Fences	500.00
Camp House	500.00
Campus or Farm (197½ acres).....	7,950.00
Total B. A. C.....	<u>\$140,121.23</u>

III. Extension Division:

Offices	\$3,051.85
Counties	2,800.47
Juab County Agent Dem.	
Equip.	\$109.57
Salt Lake Co. Agent Dem.	
Equip.	404.00
Utah County Agent Dem.	
Equip.	56.35
Sevier Co. Agent Dem.	
Equip.	457.50
Carbon and Emery Co.	
Agent Dem. Equip....	302.80
Millard Co. Agent Dem.	
Equip.	359.25
Beaver Co. Agent Dem.	
Equip.	212.50
Iron County Agent Dem.	
Equip.	276.50
Uintah and Duchesne Co.	

Agent Dem. Equip.	312.50
Weber County Agent	
Dem. Equip.	309.50

Total Extension.....	\$5,852.32
----------------------	------------

IV. Experiment Station:

General Equipment	\$21,573.60
-------------------------	-------------

Offices	\$ 2,378.25
---------------	-------------

Director's	\$ 557.25
------------------	-----------

Clerk's	240.25
---------------	--------

Reading Room	1,035.00
-------------------	----------

Basement	220.00
----------------	--------

Poultry Manager's .	219.25
---------------------	--------

Irrigation	106.50
------------------	--------

Departments	19,195.35
-------------------	-----------

Agronomy	\$3,741.50
----------------	------------

Animal Husbandry .	1,467.25
--------------------	----------

Bacteriology	1,307.25
--------------------	----------

Botany	491.75
--------------	--------

Chemistry	7,067.00
-----------------	----------

Horticulture	235.00
--------------------	--------

Poultry	3,151.00
---------------	----------

Zoology and Entomology	1,339.95
------------------------------	----------

Veterinary Science.	289.00
---------------------	--------

Photography	105.65
-------------------	--------

V. Arid Farms, Buildings and Equipment..	\$ 1,901.00
--	-------------

VI. Southern Utah Experiment Farm Buildings and Equipment.....	8,572.60
--	----------

VII. Panguitch Farm Equipment.....	912.35
------------------------------------	--------

Total Station.....	\$ 32,959.55
--------------------	--------------

*Grand Total.....	\$937,744.74
-------------------	--------------

The above Inventories for Equipment were hurriedly

*The State Power Plant is included above, but should probably not be considered as College Property.

compiled from the Inventories as handed in by the Departments in the rough. They will be checked carefully, corrected and permanently filed in the Secretary's Office.

V. REPORT OF THE FIRE INSURANCE CARRIED BY THE UTAH AGRICULTURAL COLLEGE NOVEMBER 30, 1916.

All of the Insurance carried on Plant at Logan with the exception of the Gymnasium, the Boiler Insurance, Elevator, Insurance and Insurance on Ordnance Stores is covered by a Blanket Policy as follows:

Main Building and Contents.....	\$148,000.00
Experiment Station and Contents....	7,000.00
Woman's Building and Contents.....	32,000.00
Mechanic Arts Building and Contents	32,000.00
Transformer House and Contents....	1,000.00
Poultry House and Contents.....	5,000.00
Horse Barn and Contents.....	6,000.00
Tie Shed and Contents.....	1,500.00
Cattle Barn and Contents.....	7,600.00
Sheep Barn and Contents.....	3,300.00
President's Residence	2,700.00
Director's Residence	2,000.00
Agronomist's Residence	1,600.00
Three Employee's Cottages.....	1,200.00
Green House and Contents.....	3,200.00
Piggery	1,000.00
Veterinary Hospital and Contents....	900.00
Stock Judging Pavilion.....	4,000.00
Total.....	<hr/> \$260,000.00

Insurance is carried in addition to the above as follows:

Cedar City Branch Buildings:

Physical Education Building and Contents	\$ 33,000.00
Library Building and Contents..	22,000.00
Gymnasium and Mechanic Arts Building	10,000.00
Barn	1,500.00
Boilers	10,000.00
<hr/>	
B. A. C. Total.....	76,500.00
Buildings at St. George.....	2,100.00
Steam Boilers at Heating Plant.....	20,000.00
Elevator at Woman's Building.....	5,000.00
Gymnasium	10,000.00
New Chemistry Building	30,000.00
Ordnance Stores to U. S. Government.....	3,861.19
<hr/>	
Total Insurance Carried.....	\$407,461.19

This is divided among various Companies as follows:

Home Fire Insurance Co. of Utah....	\$103,600.00
Hartford Steam Boiler Insurance Co.	30,000.00
National Union of Pittsburg.....	37,500.00
Milwaukee Mechanics of Milwaukee..	29,200.00
Hartford Fire Insurance Co. of Hartford, Conn.	13,000.00
National Union of Pittsburg.....	37,500.00
Milwaukee Mechanics of Milwaukee..	29,200.00
Hartford Fire Insurance Co. of Hartford, Conn.	13,000.00
Northwestern National of Milwaukee	25,000.00
Home Fire Insurance Co. of New York	21,861.19
Stuyvesant Fire Insurance Co. of New York	4,000.00
St. Paul Fire & Marine Insurance Co. of St. Paul.....	14,000.00
Continental Insurance Co. of New York	10,000.00
Western Assurance Co.....	5,000.00
Pennsylvania Fire Insurance Co. of Philadelphia	5,000.00

Dixie Fire Insurance Co. of Greenboro, N. C.....	1,000.00
Millers National Insurance Co. of Chicago	20,400.00
Security Insurance Co. of New Haven, Conn.	6,000.00
German American Fire Insurance Co. of New York.....	1,000.00
North River Insurance Co.....	6,500.00
Prussian National, Stettin, Germany..	11,000.00
American Central Insurance Co. of St. Louis	3,000.00
Norwick Union Fire Insurance, Limited	2,500.00
Queen Insurance Co. of New York..	2,000.00
Northwestern Mutual Fire Insurance Co.	2,000.00
Glenns Falls Insurance Co. of New York	2,000.00
Guardian Fire Insurance Co. of Utah	2,000.00
London and Lancashire Fire Insurance Co.	2,500.00
Glove & Rutgers Fire Ins. Co.....	5,000.00
Rhode Island Insurance Co.....	2,000.00
New Brunswick Fire Insurance Co..	2,500.00
Phoenix Fire Insurance Co.....	1,500.00
Niagara Detroit Underwriters.....	4,000.00
New Jersey Fire Insurance Co.....	12,000.00
American Eagle Fire Insurance Co..	12,500.00
National Ben Franklin Fire Ins. Co..	2,900.00
The Hartfield Accident Co.....	5,000.00
<hr/>	
Total.....	\$407,461.19

I hereby certify that the above is a true and a correct report of the financial condition of the College, and of the Receipts and Disbursements of same for the biennium ending Nov. 30, 1916. I further certify that the books have been well kept, that the report agrees with same, and that proper duplicate receipts and vouchers are on hand for all Receipts and Disbursements.

Very respectfully submitted,

JOHN L. COBURN,
Secretary.

UNIVERSITY OF ILLINOIS-URBANA



3 0112 112032237